

What Do Information Systems Professionals Read?

The Reality—Is Now, Always Has Been.

The Reality—Is Now

D E T A I L S			R A N K I N G					
	RESPONSE RATE	QUESTION	COMPUTERWORLD	DATAMATION	INFORMATIONWEEK	COMPUTER DECISIONS	MIS WEEK	PC WEEK
and International	38.0% (1775 replies)	Publications read regularly	1 (992)	2 (540)	4 (465)	6 (119)	3 (518)	
Intelligence and IDC	47.5% (5001 replies)	Read/Looked into in the past 6 months (4 out of 4)	1 (1771)	3 (1294)	5 (1221)	6 (1140)	4 (1290)	2 (1299)
	52% (520 replies)	Which of the following publications would you want to receive (if only one)?	1 (219)	4 (50)	2 (84)	5 (24)	3 (64)	
in the FOCUS Research	53.6% (1039 replies)	Which of the following information processing publications do you read regularly?	1 (522)	2 (494)	6 (212)	5 (409)	4 (340)	
	24.7% (221 replies)	Which of the following publications do you read on a regular basis?	1 (154)	4 (90)	2 (115)	5 (75)	3 (108)	
Intelligence, FOCUS	44.7% (2649 replies)	Read/Looked at in the past 6 months (3 out of 4)	1 (811)	2 (572)	6 (196)	4 (465)	5 (459)	
Inter Conference	28% (323 replies)	Who are the attendees — they read these publications	1 (158)	2 (152)	Not Included	Not Included	7 (74)	
gement Systems	23% (230 replies)	What computer/DP magazines do you read regularly?	1 (84)	2 (81)	3 (49)	5 (56)	9 (22)	4 (58)
using decision makers with	100% (297 replies)	Do you regularly read or page through the following publications?	1 (158)	2 (152)	Not Included	Not Included	7 (74)	
		...read these publications	1 (38)	3 (24)	8 (12)	Not Included	2 (24)	5 (24)
			1 (911)	2 (811)	6 (516)	4 (736)	3 (744)	
				7 (276)	8 (259)	6 (411)	2 (424)	
						4 (105)		

Just Ask Them...

The IS professionals of today were not born yesterday. In any industry, it takes *years* for a person to develop into a professional. And to be *recognized as such* within their chosen field. In the IS field people have relied on one authoritative source to help them in their jobs. *Computerworld*.

In 57 studies from May 1980 through May 1989, *Computerworld* was the number one choice in readership. Not one of these studies was conducted over *Computerworld's* subscriber list ... not one!

A brochure listing these independent studies and their results is available. Contact Val Landi, Senior Vice-President/Associate Publisher, *Computerworld* at (508) 879-0700 to obtain your copy.

COMPUTERWORLD

COMPUTERWORLD. The Reality—Is Now, Always Has Been.

STUDY DETAILS				RANKING					
				COMPUTERWORLD	DATAMATION	INFORMATIONWEEK	COMPUTER DECISIONS	MIS WEEK	PC WEEK
SURVEY SPONSOR	DATE COMPLETED	LIST SURVEYED	RESPONSE RATE	QUESTION	1 (1992)	2 (1501)	4 (1051)	6 (1191)	5 (1501)
1 Computerworld IDRC Communications Research Services	Mar 1989	174 names supplied by FORUS Research Systems and International Data Corporation (IDC)	50.0% (174 replies)	Publications read regularly?	11 (771)	5 (1294)	5 (1221)	6 (1161)	4 (1201)
Adams Computers	1986	1266 computer users	47.5% (581 replies)	Read looked into in the past 6 months (1 out of 4)	1 (291)	4 (101)	2 (81)	5 (71)	3 (161)
Applied Computers Research (Public domain research, Inc.)	November 1986	All 100 users of Top Computer Executives	52.5% (521 replies)	Which of the following publications would you want to receive if only one?	1 (522)	2 (194)	6 (132)	5 (491)	4 (541)
Wall Street Journal (Friday and Sunday)	November 1986	2000 top 100 managers selected at random from the FORUS Research Systems database	24.7% (121 replies)	Which of the following information processing publications do you read regularly?	1 (151)	4 (101)	2 (191)	5 (71)	5 (101)
Enterprise Data Flow (EDF) Management Corp.	July 1987	All 8 Directors of Top Computer Executives	44.7% (104 replies)	Which of the following publications do you read on a regular basis?	1 (111)	2 (521)	6 (190)	4 (451)	5 (491)
Adams Computers	1986	2000 names provided by IDC: Computers (Intelligence), FORUS Research Data & Braintrust	50% (121 replies)	Read looked at in the past 6 months (1 out of 4)	1 (150)	2 (132)	Not included	Not included	7 (71)
National Computer Conference (13 exhibit surveys)	1986	Audience survey of the 1986 National Computer Conference	23% (231 replies)	Who are the attendees - they read these publications?	1 (81)	2 (101)	1 (91)	5 (561)	9 (121)
MS Management Systems	August 1986	1001 customers and prospects of MS Management Systems	100% (129 replies)	What computer/DP magazines do you read regularly?	1 (150)	2 (132)	Not included	Not included	2 (71)
SRI Research Center Inc.	July 1986	200 completed telephone surveys of purchasing decision makers with \$100 million or more in annual sales	22% (174 replies)	Do you regularly read or page through the following publications?	1 (50)	5 (21)	8 (12)	Not included	2 (71)
Information Management Exposition (13 exhibit surveys)	1985	Audience survey of the 1985 Information Management Exposition	40% (117 replies)	The attendees read these publications	1 (91)	2 (101)	6 (151)	4 (71)	5 (71)
Alan Sefton	1985	5000 names of top computer executives from the All & Directory	80%	Publications received and read regularly (1 out of 4)	5 (501)	5 (49)	7 (271)	8 (291)	6 (111)
IBM TLI Information Center	1985	IBM information center management computers	31% (452 replies)	Trade publications read regularly	1 (101)	3 (101)	Not included	Not included	4 (105)
Office Automation Conference (13 exhibit surveys)	1985	5000 names of top computer executives from the All & Directory	30% (109 replies)	The visitors read these computer publications	1 (111)	2 (101)	5 (501)	5 (101)	4 (101)
IBM TLI Information Center	1985	IBM information center management computers	17% (126 replies)	What computer/DP publications do you read regularly?	1 (111)	2 (11)	4 (125)	3 (291)	6 (161)
IBM TLI Information Center	1985	IBM information center management computers	14% (136 replies)	What computer/DP publications do you read regularly?	1 (105)	2 (15)	4 (11)	5 (61)	5 (51)
IBM TLI Information Center	1985	IBM information center management computers	10% (171 replies)	What computer/DP publications do you read regularly?	1 (105)	2 (15)	3 (261)	6 (201)	5 (151)
IBM TLI Information Center	1985	IBM information center management computers	52% (52 replies)	Which of the following computer industry publications do you read regularly (1 out of 4)?	1 (451)	2 (261)	6 (134)	5 (101)	5 (151)
IBM TLI Information Center	1985	IBM TLI Information Center	69% (646 replies)	What computer/DP publications do you read regularly?	1 (425)	3 (251)	Not included	Not included	Not included
IBM TLI Information Center	1985	IBM names with management titles supplied by IBM's membership list	41% (106 replies)	What publications do you read in the computer field?	1 (47)	2 (44)	8 (11)	5 (251)	7 (12)
IBM TLI Information Center	1985	IBM TLI Information Center	9% (186 replies)	What computer/DP publications do you read regularly?	1 (55)	5 (42)	Not included	Not included	4 (12)
IBM TLI Information Center	1985	IBM TLI Information Center	Not included	Which of the following trade publications do you read regularly?	Not included	2 (46)	Not included	Not included	4 (12)

COMPUTERWORLD

In Depth Exclusive:
A 1980s Retrospective

INSIDE

Barbed Star: Xerox sues Apple, charging that Mac copyright claims for graphical interface are invalid. Page 89.

Fourteen months late, Timeplex is ready to ship net management system; beta-test users say it was worth the wait. Page 4.

Ashton-Tate double-faults, losing exclusive retail distribution rights to Microsoft SQL Server. Page 6.

'Trojan horse' hidden in purported AIDS evaluation program scrambles hard disks in five European countries. Page 4.

Wang targets IBM base with imaging interface for CICS users. Page 89.

'Tis the season: As you're awaiting that Mastercard purchase authorization,



this year it will be PCs flashing the go/no-go signal to the checkout

clerk. While you're in the spending mood, take a look at what's available in recreational software. Stories, page 37.

Small companies caught up in EDI winds as larger companies make them go along for the flight. Page 6.

CBS script: Point/Counterpoint

BY CLINTON WILDER
CW STAFF

TREND SETTERS

NEW YORK — Who says you can't have it all?

CBS, Inc. hopes to reap the benefits of both sides of the debate over centralized vs. decentralized development in a current information systems restructuring. The effort places systems analysts closer to the CBS business units while consolidating programmers in a central operation.

This best-of-both-worlds approach is CBS' attempt to get more bang for its IS buck. It represents the firm's response to two frequently conflicting pressures on large IS organizations: making applications more

responsive to business needs while gleaning the benefits of economies of scale and computer-aided software engineering methodologies in the programming shop.

"This is not a cost-reduction initiative," commented James L. Halsey III, vice-president of MIS at the \$2.8 billion broadcast giant. "This is an effectiveness and productivity initiative."

The restructuring was announced to CBS employees in late October and is slated to be completed by the end of March. Halsey said that IS must be more responsive to user needs at CBS,

which has experienced top management changes, organizational upheaval and job cuts during the past several years. CBS trails the other two major networks in television ratings and sold its record business to Sony Corp. in a highly publicized deal last year.



Halsey retools IS lineup

"We have fewer jobs throughout the company, and we need better systems to compensate for that," Halsey said. "We need to create more of the right software products with the same resources."

Consultants predicted that many more IS organizations, *Continued on page 8*

Spy sting nabs NCR worker trying to pawn image goods

BY ELLIS BOOKER
CW STAFF

BLUE BELL, Pa. — NCR Corp. announced its intent earlier this month to enter the imaging market but stopped short of revealing any products. Nevertheless, one of its employees allegedly tried to make a sale last week — and to a competitor, no less.

Last Monday, as he walked

through the parking lot of Unisys Corp.'s headquarters here, Anthony S. Latchoo was arrested by Federal Bureau of Investigation agents on charges that he tried to sell NCR trade secrets to Unisys.

The arrest followed a two-month sting operation involving Unisys, the FBI and the U.S. Attorney's office in Philadelphia. The FBI, which informed NCR

about the attempted espionage on Dec. 7, praised Unisys and NCR for their cooperation in the case.

Latchoo, 28, a product requirements specialist in NCR's engineering and manufacturing division in Waterloo, Ont., was charged last week with interstate transportation of stolen property for allegedly taking marketing documents, preliminary product information documents and a business plan from NCR's headquarters in Dayton, Ohio.

Latchoo, who has been with *Continued on page 89*

The Valley ain't what it used to be

Chip firms climb out in search of newer, greener (and cheaper) pastures

BY JAMES DALY
CW STAFF

Imagine Palm Springs without the palms or the Windy City with scarcely a breeze. Then you will get an idea of what is happening in Silicon Valley.

The recent announcement by

Intel Corp. that it will phase out its last chip-making plant in the San Francisco Bay Area is the latest indication that the famous technological dell is in serious danger of no longer producing the substance that inspired its renowned nickname.

"Financially speaking, California is not the friendliest place to be for a business," said Millard Phelps, an analyst at Hambrecht & Quist, an investment firm in San Francisco. "It's very similar to the way automakers left Detroit a few years back."

A variety of factors, including the scarcity of low-cost labor, high taxes, lengthy permit appli-

cation procedures and the state's strict environmental safety regulations, have sent other chip makers such as LSI Logic Corp. and Advanced Micro Devices, Inc. scurrying. National Semiconductor Corp. remains the last major concern to retain a large manufacturing facility in the area, keeping most of its production close to where the Intel plant is being shut down in Santa Clara.

Although National Semiconductor trimmed back its Valley operations in September when it melded a smaller Mountain View manufacturing site into the *Continued on page 12*

IS frowns greet IBM service fee

Software-assist freebie now a thing of the past?

BY ROSEMARY HAMILTON
CW STAFF

IBM rolled out a software services program last week that left some users wondering if the firm was putting a price tag on support long provided as informal hand-holding.

Softwareexcel, which consists of three levels of service for IBM 370 customers, ends the policy of bundling basic support in the software license fee and ushers in a formal structure of service options that can be had for various monthly charges.

Aimed primarily at large IBM 3090 accounts that can afford to pay for such services more easily, Softwareexcel offers a range of support. Users can opt for a simple plan such as electronic access to the IBM National Service Division's database on software problems or the full-blown package that can include a full-time IBM staffer at the customer's site.

It also holds the distinction of being the first IBM large-system software service offering that covers non-IBM software.

"Obviously, it's an unbundling and seen as revenue *Continued on page 16*

To Russia with lust



Gorby-mania strikes computer vendors:

- CDC receives \$32 million order for Cyber CPUs.
- Data General sets up mini-computer venture.
- PC vendor gains defense nod for parts shipments.
- U.S. indicates gradual pace for relaxing export restrictions. Stories, page 88.

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NEWS

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Quotable

"The overall level of satisfaction with systems development is very bad, and companies are looking to come up with a better way of doing it."

ROBERT WALSH
BOSTON SYSTEMS GROUP

On CBS' move to restructure IS. See story page 1.

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- 55 Take a walk back through computing's most dynamic decade with our illustrated 1980s retrospective and time line. By Glenn Rifkin with Kim Nash and Jodie Naze.

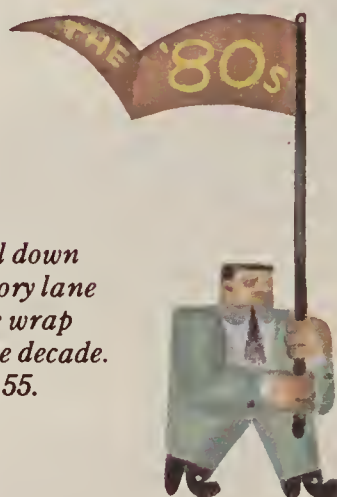
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UPDATE

Last paper of the year. Last year of the decade. Last decade of: the dominance of proprietary architecture; the dominance of proprietary graphical interfaces; the dominance of U.S. computer vendors; the dominance of Japanese chip vendors; user-unfriendly systems; the glass house; the nonrelational database; the male-dominated IS workplace; downtime; Cobol; islands of automation; magnetic storage; 300 bit/sec. modems; handwritten phone messages; computer-illiterate CEOs; 'you never get fired for buying IBM' mentality; the Cleveland Indians' losing streak. Well, 16 out of 17 ain't bad.

Stroll down memory lane as we wrap up the decade. Page 55.



Educators are trying to make programs for IS executives that are mind-expanding but grounded in the real world, too. Page 49.

EXECUTIVE BRIEFING

■ **The dreaded word — unbundling** — reared its ugly head last week as IBM customers reacted to the vendor's new software support plan. Although IBM denied that users will pay more than they currently do, the three-tiered Softwareexcel service plan struck some customers as charges for support that they now receive free as part of IBM software license fees. IBM will support other vendors' software and Apple microcomputers for the first time. **See stories pages 1 and 16.** The firm is also gearing up its disaster-recovery services for a major push into that market next year. **Page 10.**

■ **A hybrid centralized/decentralized systems development restructuring** at CBS may prove to be a model for many IS groups in the 1990s — if their firm is not too geographically dispersed. The broadcast giant is consolidating programmers centrally while placing systems analysts in each of its three main business units. It's aiming for better system specifications, more cross-functional synergies and better development productivity with existing resources. **Page 1.**

■ **The walls come tumbling down** in the Eastern Bloc as Control Data, Data General and US West announce export deals to the Soviet Union, pending approval from the Department of Commerce. The Bush administration is also considering easing high-tech export restrictions to Hungary, Poland and other nations in Eastern Europe. **See stories page 88.**

■ **The IS profession has come a long way** in the 1980s, but it has had an often contentious path into the competitive business world. Users and IS professionals need a more cooperative relationship to tap the full potential of information technology in the next decade. **Page 53.**

■ **High-tech hijinks** are revealed as an NCR employee is charged with attempting to sell trade secrets to competitor Unisys for an alleged \$200,000 bounty. The suspect reportedly targeted a critical marketing area: imaging. **Page 1.**

■ **Smaller firms are realizing** they must adopt EDI technology as an increasing number of their larger customers establish it as a requirement for doing business. It can be a tricky procedure for companies that have not yet automated and integrated other business functions. **Page 6.**

■ **On-site this week:** That remote computer authorizing

your holiday gift credit card purchase may well be a PC. Tampa, Fla.-based Telecredit has downsized many of its credit authorization processing from a Tandem CPU to 10 286-based PCs. **Page 37.** Farther south in the Sunshine State, one of Florida's largest law firms renders a positive verdict on Wang's Freestyle imaging system. Exchanging briefs and documents electronically saves 150 attorneys at Miami's Steel Hector & Davis an average of one half hour per day. **Page 25.** Another professional firm, Chicago-based advertising agency Leo Burnett Co., cops a user excellence award for its 1,200-node Novell local-area network. **Page 44.**

■ **In eliminating levels of management,** corporate restructurings have helped spawn a new breed of IS project manager charged with accomplishing specific objectives — launching a new product, for example. Also known as internal consultants, they must command a broad understanding of business and technology. **Page 73.**

■ **Today's imperative of speedy response** in corporations has pushed decision-making down to technical specialists. To handle their expanded responsibility, the specialists must know how to analyze market data and trade-offs between cost and quality as well as when to pass on a decision that is beyond their expertise. **Page 85.**

SYNCSORT PRESENTS 3 NEW WAYS TO MAKE SHORT WORK OF LONG JOBS.



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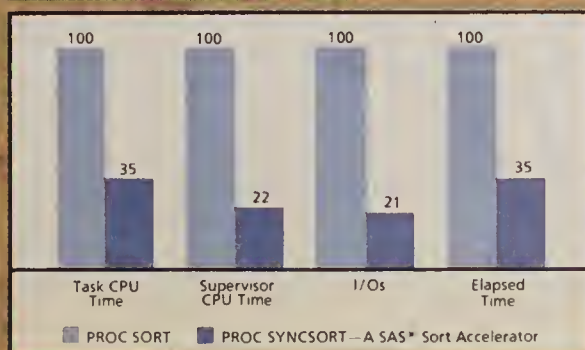
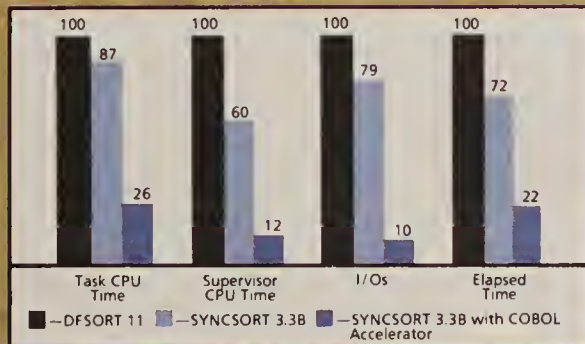
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Testers talk up tardy Timeview

BY ELISABETH HORWITT
CW STAFF

WOODCLIFF LAKE, N.J. — Timeplex, Inc. is expected to ship its Timeview 2000 network management system by year's end, ending a 14-month shipment delay that has frustrated customers and may have helped Timeplex lose its position this year as top dog in the T1 switch arena.

The delayed appearances of Timeview and Timeplex's Link/100 high-end switch, both of which were due in October 1988, have caused a number of major Timeplex users to consider abandoning Timeplex for a rival such as Network Equipment Technologies, Inc. (NET), according to Jeremy Frank, a vice-president at Stamford, Conn., research firm Gartner Group, Inc. Link/100 began shipping last summer.

One of the main reasons for the delay in shipping Timeview, Timeplex spokesman David Woodall said earlier this year, was the need to respond to user demands for "something advanced in terms of a human interface that would be simple to use and modeled the way people intuitively think about network diagnostics."

Management systems geared to the nonexpert user are becoming critical to Fortune 500 communications departments that are trying to manage increasingly large and complex networks with limited technical staffs. One such department is Sabre, the communications divi-

sion of Federal Department Stores, Inc. in Cincinnati, and a Timeview beta-test site.

Timeview's predecessor, the Link Network Management System (LNMS), was designed to be operated by a network management professional, according to Sabre telecommunications manager Andree Greer. The limited number employed at Sabre were spread very thin, frequently having to make over-the-phone diagnoses in order to troubleshoot a 39-site, eight-node network, she added.

Thus the need for Timeview 2000, a mouse-driven, graphics-based system that is said to screen the neophyte from networking complexities. Where LNMS users must type in long command sequences to initiate various functions, with Timeview 2000 "you just keep clicking the mouse" to zoom in on a problem or initiate loop-back testing, Greer said.

"No one has the luxury of training as many people as they would like," said Tom Talley, manager of telecommunications engineering and planning at Texas Utilities Co., another Timeview beta-test site. With Timeview, "we can have systems dispatchers watch the system in graphics mode and do troubleshooting and diagnostics that they wouldn't be able to accom-

plish" using LNMS' command-driven mode, Talley added.

Both Greer and Talley said that while they could have used the product a lot sooner than they did this fall, they appreciated Timeplex's waiting in order to get it right. "There were only a few minor bugs; Timeplex wouldn't let me have it until it



Talley (top) gets a Timeview lesson

worked," Greer said.

Timeview 2000 still lacks several strategic elements that Timeplex promised when it originally announced the product.

Texas Utilities expects in the next few weeks to receive its beta-test copy of Version 1.05, which may provide full interactive management of Link/100 switches, Talley said. The current version only provides a

dumb ASCII terminal link to the Link/100's IBM Personal Computer supervisory system, he added.

On much longer term hold is the Timeview 4000, which Timeplex had promised to ship just about now. Announced with the Timeview 2000 in June 1987, the 4000 was meant to be a multiuser, multivendor management platform that could handle a variety of networking devices via Open Systems Interconnect (OSI) protocols, Woodall said.

Timeplex still has plans to develop a 4000 but will not commit to a schedule, said Timeplex director of network management product marketing Donald Passaro. Timeview 2000 will become OSI-compatible, with the rest of the industry, "somewhere in late 1991," he added.

Timeview 4000 may have been exactly the OSI-compatible, multivendor management platform that Timeplex parent Unisys Corp. was seeking earlier this year. With nothing available from Timeplex but a T1 network management system, Unisys last September signed an agreement to sell AT&T's Accumaster Integrator as a way to coordinate management across its own, Timeplex's and other vendors' networks.

Timeview 2000 Phase 2, expected out in the first half of next year, will be able to send alarms to Accumaster, Passaro said.

Timeplex, which has dominated the T1 switch industry for the past five years, will wind up in close to a dead heat with NET in terms of market share for 1989, according to research companies Gartner Group and Vertical Systems Group.

Trojan horse sneaks in with AIDS program

BY MICHAEL ALEXANDER
CW STAFF

Personal computer users in at least five European countries scrambled last week to rid their hard disk drives of a destructive "Trojan horse" concealed inside a program designed to evaluate a person's likelihood of contracting Acquired Immune Deficiency Syndrome (AIDS).

Beginning last Tuesday, thousands of users of MS-DOS-based personal computers received unsolicited in the mail an "AIDS Information Introductory Diskette, Version 2.0" and a blue leaflet containing instructions and a license agreement.

The program contained a Trojan horse, so called because it is hidden inside another, ostensibly innocuous, program. In some instances, the rogue program destroyed data and programs; in

others, it altered file names and shifted them into hidden subdirectories. The Trojan horse was activated randomly after it had been installed on the user's hard disk drive.

"It appears to be the first act of entrepreneurial malice by [an organization] that went all out to bust folks," said David Stang, computer consultant at the National Computer Security Association in Washington, D.C. "It was professionally packaged; they mailed it from a fancy address in London, and it is obvious that these people spent money on this joke."

There were no reports of U.S. computer users receiving the disk as of the end of last week, according to Paul Holbrook, a spokesman for the Computer Emergency Response

Team at Carnegie-Mellon University's Software Engineering Institute.

The license agreement packaged with the AIDS disk contained clauses that indicated that the program would adversely affect other programs stored on the PC's hard disk drive.

The agreement offered buyers the option of leasing the program with 365 uses for \$189 or for the "lifetime of your hard disk" for \$398. The program instructed users to send money to PC Cyborg Corp. in Panama. The disk was sent to computer users in the UK, France,



West Germany, Italy and Sweden, the majority of whom were subscribers to computer magazines and newspapers.

PC Business World, a London-based publication owned by International Data Group, Computerworld's parent company, reported that it had sold a subset of its mailing list containing 7,000 names to a company calling itself Ketema and Associates in London. The apparently ficti-

tious company closed its doors in December, and its operators have reportedly fled.

The British Ministry of Defence, which loaded the disk on its network, the Australian and New Zealand Bank and the London Stock Exchange were all hit by the Trojan horse, according to PC Business World reports.

Other computer users and organizations that reported having received the disk included dozens of delegates to an AIDS conference in Sweden, an AIDS charity, hospitals and other medical institutions conducting research into the AIDS virus.

The IBM PC Users Group in London received 50 phone calls in one day from users who had received the disk, said Alan Jay, an editor of the user group's magazine. None of the callers claimed to have lost data, he said.

Members of the group have reverse-engineered the program and have concluded that it was "written by an exceedingly competent programmer" and that the AIDS and Trojan horse programs "were quite sophisticated," Jay said.

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Smaller firms drawn to EDI fire

BY ALAN J. RYAN
CW STAFF

WASHINGTON, D.C. — As the number of large companies moving to electronic data interchange (EDI) continues to climb, smaller companies that want to do business with them are in some instances mandated or strongly encouraged to move to the technology as well.

But as speakers at last week's 21st National EDI Systems Conference & Exhibit said, many smaller companies are hesitant to move to EDI because they are not technically sophisticated; they know little or nothing about EDI, and they feel they have inadequate financial and human resources to devote to the move.

Still, when their largest customers want invoices sent electronically, smaller companies often feel compelled to comply.

Companies that are being encouraged to move to EDI should ask plenty of questions, said Jim Langford, director of EDI Services at Harbinger EDI Services in Atlanta, a value-added network provider. Potential questions are, what are you going to

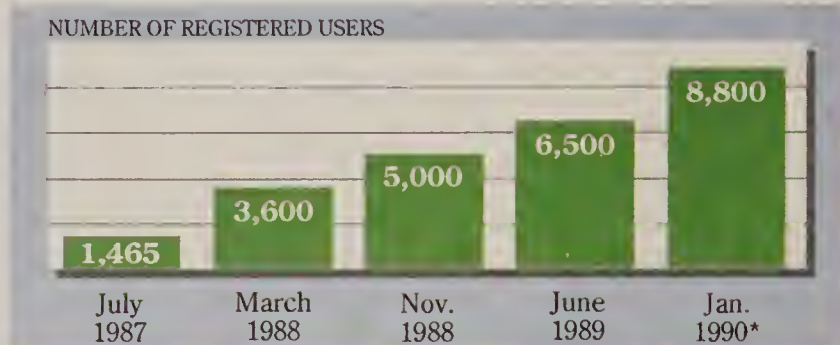
do for me, how do I get started, and what will it cost?

Janice Gessin, manager of information services at Pacific Bell in San Ramon, Calif., said one small firm that Pacific Bell is working with, a safety glasses manufacturer, was shy of tech-

"After two or three months, they came back to us and said they had won many new contracts because they were EDI-capable," she said. That was an advantage for the customer that Pacific Bell had not really thought of, Gessin admitted.

Catching on

The number of companies listing themselves in a directory of electronic data interchange users is growing at an annual rate of 45%



*Estimated

SOURCE: EDI YELLOW PAGES INTERNATIONAL

CW CHART: DOREEN DAHLE

nology — a personal computer and modem purchased by the firm was basically being used as an expensive paperweight.

Later, after hearing one-to-one how its own business could benefit from EDI, Gessin said, the company decided to try it.

"EDI has to be an equal-opportunity relationship. The big guy can't always dictate to the smaller trading partner," said Gary Dalton, office manager of AT&T EDI in Bridgewater, N.J.

The only way for EDI to be truly successful, Dalton said, is

for all parts of the business to be integrated, such as inventory control, purchasing, receiving, accounts payable, accounts receivable and point of sale. Still, for many companies, that is not possible at the start. Often, firms will devote a single, stand-alone PC to handle EDI.

Once on their way, "smaller companies can often move faster toward EDI implementation than big companies," Dalton said. In turn, the smaller companies will look to their suppliers and trading partners for EDI capabilities.

One user said his company is spending \$1 million this year on EDI. "That's forcing me to go out and put the same kinds of pressures on my smaller vendors," he said. At the same time, "we are trying now to use this with more and more large vendors, too, because it has cost us so much." He said he is frustrated, though, because many of the larger companies are still in the early phases of EDI and are not yet ready to use it with companies his size.

The right approach for any company to move to EDI depends on its position in the EDI arena. If the trading partner is a major supplier, a mandate may be the correct approach. If the trading partner is a customer, the company seeing the EDI may have to sell the advantages of EDI to the customer.

One trading partner, Sears Communications Co. (SCC) last week announced alliances with eight U.S. banks to provide Sears Financial Electronic Data Interchange Services.

A Sears spokeswoman said Sears will provide the trading partners of the Merchandising Group with their payment and remittance information in whatever format they prefer.

The alliance will allow SCC to provide the divisions of Sears with the ability to pay its merchandise suppliers through the banks with the EDI capabilities. The project is in a test phase through the Sears Merchandise Group, a division of Sears, Roebuck and Co. Sears will bring the group on-line in early January.

486 bugs squished; Intel resumes shipping

BY RICHARD PASTORE
CW STAFF

Like prisoners crossing off calendar days, personal computer makers have been marking time until bugless Intel Corp. 80486 chips set free their high-end PC designs. The vigil may have finally ended, as corrected 1486 microprocessors are funneling out of Intel and into the hands of PC vendors.

But at least one vendor, NCR Corp., has opted to take its chances with the buggy chip to beat its rivals to market.

Intel thought the 486 chip was ready to roll in late October, but testers at Compaq Computer Corp. unearthed two floating-point bugs that flubbed certain scientific calculations.

Intel went back to the drawing board and made a fix to one of the chip's glass "masks." The correction went as planned, and "we began shipping production volumes the week of Nov. 20," an Intel spokeswoman said. "So far, it looks very good."

NCR, betting that the bugs would not rear their heads in business applications, decided to ship its PC486/MC in mid-December as planned, with the older version of the chip. The boxes are currently on their way to Businessland, Inc. warehouses, said Bruce Langos, director of product management.

NCR is hedging its bet with an

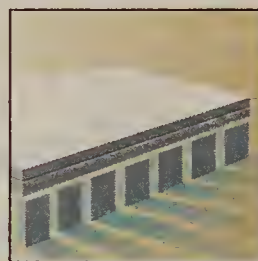
offer to replace the chip with the new version should any customers unearth the bug. "If the problem does occur, we will replace it free on-site," Langos said. "But the odds of running into it are very, very small."

Compaq is keeping its fingers crossed as the chip runs the company testing gauntlet. "So far, it's working well for us," a spokeswoman said. The firm's 486 systems are set to ship in the first weeks of January — two months later than originally hoped.

Hewlett-Packard Co. has two more weeks of testing to perform on the new chip. "The first thing we did was take a look at the things that caused the bugs to show themselves in the previous version," said Richard Archuleta, director of advanced systems development. "The fixes appear to be fine."

HP has not had to push back the first-quarter shipping target for its Vectra 486. The company negated the effects of the chip delay by continuing testing on the buggy chip. Now that the corrected version has arrived, "we can do a final quick check to make sure the changes they made haven't hurt the reliability," Archuleta said.

Once the new chip passes muster at IBM, the company will restart its 486 upgrade-board assembly line, which has been idle since October.



Ashton-Tate gives up server monopoly

BY CHARLES VON SIMSON
CW STAFF

TORRANCE, Calif. — Although long bloodied in the database server market, the knees of Ashton-Tate Corp. showed their first hint of buckling last week under the weight of a sharp jab from Microsoft Corp. But while shaken, Ashton-Tate is likely to stay off the canvas, thanks in part to a measure of help from an old foe, Lotus Development Corp., prior to the start of the bout's latest round.

Ashton-Tate and Microsoft announced that Ashton-Tate would no longer enjoy exclusive retail distribution rights to SQL Server, the database engine.

The two companies said that when Ashton-Tate ships a version of the delayed Dbase IV Version 1.1, designed to work with SQL Server — or no later than July 31 of next year — Ashton-Tate will begin selling SQL Server only in conjunction with Dbase IV or other Ashton-Tate front ends that support SQL Server. Microsoft said that it will seek to augment its distribution channels for the product but announced no specific plans.

In addition, Ashton-Tate announced that earlier this month it had sold its entire holdings in Sybase, Inc., the Emeryville, Calif.-based developer of SQL Server, to Lotus, with Sybase acting as an intermediary. Ashton-Tate reportedly owned

about 5% of Sybase. The sale completed Lotus' plan to purchase 15% of Sybase — originally announced in September.

Neither Ashton-Tate nor Lotus would disclose the number of shares involved or the price of the transaction, but based on Sybase market valuations of \$100 million to \$200 million, the sale was worth between \$5 million and \$10 million to Ashton-Tate and would be included in fourth-quarter 1989 revenue.

Downward slide

Ashton-Tate posted a net loss of \$19.7 million for the third quarter on net revenue of \$53.9 million, and sources close to the company said that Ashton-Tate needed the cash in the face of flat revenue in the fourth quarter. Ashton-Tate's Sybase holdings were less than 5% of its own total assets, and as such, did not have to be publicly reported.

Observers agreed that Ashton-Tate was simply exhibiting a weakness in the SQL Server ring that really began nearly a year ago when Dbase IV Version 1.1 was first delayed.

"The original marketing strategy involved getting Dbase IV Version 1.1 out the door, stimulating a pull demand for SQL Server," said David Bayer, a software analyst at Montgomery Securities in San Francisco. "We have known for a while that that part of the strategy wasn't coming through; Microsoft is


just being realistic in ending the relationship."

Ashton-Tate officials would say little about the conditions that led to the severing of the agreement, maintaining that they would use their lead in retail marketing to stay ahead of the competition.

Microsoft executives said there was a need to broaden the distribution channel. "It has been disappointing that the server version of Dbase didn't come out on time," said Adrian King, general manager of work group services at Microsoft. "But the broader issue is getting the product out on a wider front."

Ashton-Tate publicly denied making the stock sale because it needed the cash and said that it sold the shares because its ownership of Sybase caused confusion among customers. (Ashton-Tate's Interbase subsidiary competes with Sybase in mini-computer database products.) The move was seen as a strong increase in Lotus' long-term aspirations to decrease its dependence on 1-2-3 spreadsheet revenue, which currently makes up the vast majority of its earnings.

The acquisition shores up Lotus' presence in the database arena, and most observers felt that Lotus would likely try to buy Sybase outright. "It is a logical consolidation for Lotus," said Nancy McSharry, an analyst at International Data Corp. in Framingham, Mass.



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NEWS SHORTS

IBM works on gigabit density

IBM scientists said last week that they have squeezed a billion bits onto a square inch of disk media using thin film heads that are three times closer to the disk than commercial technology allows. However, products incorporating this technology will not be available for several more years. The experiment recorded and read data at 3.5 million byte/sec., IBM said.

Du Pont recasts Tariff 12 deal

Following in the footsteps of General Electric Co., Du Pont Co. has become the latest firm to update its Tariff 12 contract. Du Pont last week signed a new, \$45 million Tariff 12 contract that supersedes the contract it signed with AT&T last year. AT&T retains the majority but not all of Du Pont's telecommunications business. In September, the chemicals and energy firm signed with MCI Communications Corp. to provide a multivendor electronic mail network based on X.400.

Bulk buyers extend Sprint deal

EDS Telecommunications Services subsidiary M&SD Network Services has extended a \$40 million voice and data networking contract with U.S. Sprint Communications Co. that it made on behalf of the American Business Network Limited Partnership. The contract is expected to increase to \$100 million annually through 1991. The partnership, whose 60-plus corporate members combine their buying power, recently signed a \$25 million contract with MCI.

Ericsson to resell NET switches

Swedish telecommunications vendor Ericsson Business Communications AB has signed an agreement to resell Network Equipment Technologies, Inc.'s IDNX T1 switches as part of its own private branch exchange and packet-switch lines. The two companies have also formed a development committee to integrate their respective products.

RISC finds home in printers

BGL Technology Corp. added reduced instruction set computing (RISC) processors to its Mark IT and Mark IV laser printers last week. The printers are already built around an embedded IBM Personal Computer AT in the controller, which handles the front-end work. The RISC processor simultaneously draws the pictures. The dual processing plus double buffers enable the printers to produce complex graphics and text files at the rated speed of the engine, which is 12 pages per minute for the Mark IT and 26 pages for the Mark IV.

COS to provide GOSIP tests

The Corporation for Open Systems agreed last week to provide technical support and conformance test suites to help the National Institute of Standards and Technology determine whether vendor products comply with the Government Open Systems Interconnect Profile (GOSIP). After Aug. 15, 1990, federal agencies must use the GOSIP specifications when acquiring networking products.

Hitachi joins NFS ranks

Hitachi Ltd. last week contracted to license Sun Microsystems, Inc.'s Open Network Computing/Network File System technology, a facility for transparently sharing files in a heterogeneous, networked computing environment. Hitachi will reportedly develop an NFS version for its mainframe computers, allowing workstations networked with Hitachi mainframes to access remote files as if they are local.

Datapoint reports loss

In the wake of a \$13.1 million net loss reported for its first quarter of fiscal 1990 (see story page 69), beleaguered San Antonio-based communications products maker Datapoint Corp. last week reduced its 518-person work force by 144.

Apple pie getting a bit stale?

BY RICHARD PASTORE
CW STAFF

Apple Computer, Inc. is losing its luster among its original customer base, the home consumer market, observers said. A growing consumer defection to IBM and compatible products has soured Apple's bottom line this quarter; revenue will be lower than expected, and earnings will fall below last year's mark, Apple announced last week.

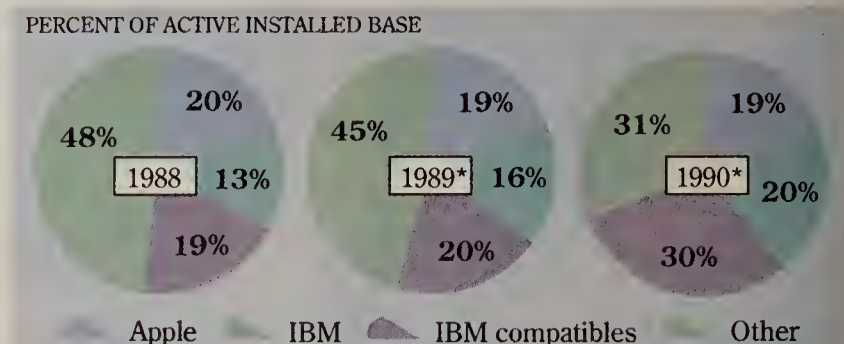
Analysts are predicting that earnings will be down about 10% over the same period last year. They also agree that the major culprit is soft sales of Apple's low end — the Apple IIGS, Macintosh Plus and Mac SE — in the consumer and small business markets.

Coupled with a softer business market and the Macintosh Portable's tardiness, slumping consumer sales will mean a 6% quarterly revenue gain instead of the 20% originally predicted, said Fred Cohen, an analyst at Labe, Simpson & Co. located in New York. Consumer sales alone account for 25% of Apple's fourth-quarter revenue, Cohen said.

"Overall, Apple is going

No-growth foundation

Apple's share of the consumer market is eroding under a wave of growth by IBM and IBM-compatible systems



through a decline in the consumer market vs. IBM compatibles," said Natasha Thomsen, an analyst at New York-based market research firm Link Resources Corp. (see chart). The main reason is price, Thomsen noted. IBM and makers of compatibles are adopting more competitive pricing.

Another factor is increasing availability of viable graphical user interfaces for IBM Personal Computers and compatibles. Once, the Mac was the only graphical user interface game in town. But now consumers and business customers can buy products such as Microsoft

Corp. Windows or Presentation Manager to jazz up their old PCs and thus forego the costly Mac conversion.

"Microsoft Windows is becoming more of a viable alternative environment; it's beginning to hurt Apple," said Stephen Smith, an analyst at Paine Webber, Inc. in New York. Paine Webber estimates that Windows shipments are up from 40,000 to 50,000 per month a year ago to 80,000 to 90,000 per month today.

"It's ironic that with all the talk about OS/2 and Unix, it's a 4- or 5-year-old product that's doing the damage," Smith said.

CBS script

FROM PAGE 1

under unprecedented pressure from top management to perform better, will restructure their development groups in the early 1990s.

As one example of that pressure, 64% of chief executive, financial and operating officers surveyed by *Computerworld* earlier this year said they believe their companies are not getting the most out of their information

he joined CBS in November 1988. "There were basically seven different MIS organizations, each reporting to a business unit," he said. "They produced a number of different application portfolios, some of which were duplicated."

From among the software development professionals in the seven groups, CBS created two new development organizations: business systems analysis and application development. The 38 analysts will work directly with business unit users as so-called

Halsey said that the close physical proximity between analysts and programmers is essential for this type of restructuring.

"If the programmers feel like second-class citizens stuck in a data center while the analysts are far-flung, that won't work," he said.

Separating the analyst and programming functions can improve development specifications, said Thomas Nickles, a principal at Cambridge, Mass.-based IS consultancy Index Group, Inc. "It forces more formality; things have to be spelled out better before the coding starts," he said. "When they are all in one room, Joe can just say to Bob, 'Here's what we want,' and it's not precise enough."

The centralized programming will help create common systems that can be shared among business units, such as financial reporting applications or an inventory management system for satellite transponders, Halsey said.

"The issue of being able to build enterprisewide systems is more important than the economies of scale, and there is a degree of centralization that you need for that," said Ronald Brzezinski, a Coopers & Lybrand consultant and former top IS executive at Quaker Oats Co.

CBS' three other IS divisions — office systems, MIS operations and telecommunications — will not be affected by the development restructuring.

THE OVERALL level of satisfaction with systems development is very bad, and companies are looking to come up with a better way of doing it."

ROBERT WALSH
BOSTON SYSTEMS GROUP

systems investments.

"We're seeing a lot more organizational moves; it's no longer simply lip service or slogans," said Robert Walsh, vice-president of Boston Systems Group, Inc., a distributed systems consultancy in Boston.

"The overall level of satisfaction with systems development is very bad, and companies are looking to come up with a better way of doing it."

Halsey, a former IS consultant at Coopers & Lybrand, saw the need for a better way when

client managers but will report centrally to a New York-based managing director, Ann Harkins. The 40 programmers, centralized on one floor in CBS' midtown-Manhattan headquarters, will report to Brendan Kehoe, managing director of application development.

The analysts will be decentralized functionally but not physically. CBS' three major business units — network television, national radio and the local TV stations that it owns and operates — are all based here.

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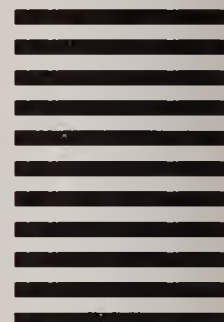
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1:IBM Journal of SAA 2:DATAPRO survey, August 1988, companies with sales over \$10 million 3:Donaldson, Lufkin & Jenrette report

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COMPUTERWORLD

IBM spurs on disaster service

BY JEAN S. BOZMAN
CW STAFF

IBM is speeding up implementation of a fledgling disaster-recovery service, company executives said last week. Although the IBM Business Recovery Ser-

vices (BRS) is not generally available, seven hot-site data centers are in place, and IBM sales personnel are now writing custom contracts that include the BRS service.

"We're in limited availability while we're building our centers

up and while we're building our experience levels up," said Joseph Rufin, BRS director at the Tampa center, in an interview last week. The program was first announced in March but probably will not be generally available until early 1990.

Tampa is IBM's largest hot site, with 40,000 square feet of office space and an equal amount of raised floor in its computer area. A second prime recovery site in Franklin Lakes, N.J., is nearly as large.

Next month, two IBM disaster-recovery centers will open in Los Angeles and Chicago, underlining IBM's challenge to two well-established recovery pro-

viders, Comdisco Disaster Recovery Services, Inc. (CDRS) in Rosemont, Ill., and Sungard Data Systems, Inc. in Wayne, Pa.

Disaster-recovery competitors confirmed last week that IBM is aggressively prospecting for clients. "We have seen a consistent, aggressive sales effort from IBM since the May/June time frame," said Ray Hipp, president of CDRS.

"I'm glad to see another player in the industry," said Pat Murray, vice-president of MIS at United Stationers, Inc. Murray is planning to tour the Tampa site in January.

The Des Plaines, Ill., stationery supplier used CDRS to recover from a serious disruption to its voice/data network caused by an Illinois Bell phone office fire in 1988. "The customers are going to win because greater competition brings new services and lower costs," Murray said.

Like CDRS and Sungard, IBM will have major data centers outfitted with IBM 3090 mainframes and other 370 computers in key cities across the U.S. There are five smaller recovery centers at IBM's National Service Division (NSD) sites in Detroit, Philadelphia, Atlanta, Washington, D.C., and Los Angeles to support IBM System/36, 38 and Application System/400 computers.

The primary sites will be linked by a national backbone network to smaller, regional recovery centers, IBM said. The backbone network will be anchored by IBM's Information Network, also located in Tampa.

As recently as mid-October, NSD had been prepared to refer hot-site customers to 22 IBM data centers that had agreed to make some of their mainframes available to disaster-recovery clients, said Joseph Donohue, regional NSD vice-president in San Francisco. But even the Oct. 17 San Francisco earthquake failed to activate any IBM hot sites, Donohue added.

Open systems support

IBM has decided that it must back up users' varied computer systems, no matter what vendor made them. "We're doing the same thing the other competitors do," Rufin said. "We will support any OEM product even if we have to go out and buy it."

Customers will pay a monthly fee based on the size of the systems supported. The fee pays for just 72 hours of testing per year, but additional eight-hour blocks of testing time can be scheduled at a cost of 5% of the monthly fee. Unlike CDRS and Sungard, IBM will not require a "declaration" fee in the event of a disaster condition.

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Valley

FROM PAGE 1

Santa Clara facility, spokeswoman Mary Coady said the firm has no plans to eliminate the Santa Clara plant.

Coady also noted that most of the company's manufacturing is done outside of California and said it was unlikely that it would

ever expand the local facilities.

Semiconductor makers have increasingly moved their manufacturing sites to places like Texas, New Mexico, Arizona and Oregon, leaving scattered research and development sites as their remaining Silicon Valley outposts.

"California is not going out of its way to draw high-tech industry anymore," said Mark Rea-

gan, an analyst at Dataquest, Inc. "The local communities know some of the environmental problems these facilities can cause and are holding the businesses to that extra letter of the law that sometimes makes the difference between a company staying or going."

Analysts said the moves make a lot of economic sense in a generally struggling industry. The

Bay Area ranks among the most expensive regions of the country, and high rents can carve into already slim margins. "Present business is way down, and the pinch has to hit somewhere," said Howard Dicken, editor of the Scottsdale, Ariz.-based "Semiconductor Economics Report" newsletter. "Most of the companies would rather move than adjust."

Austin, Texas, has particularly become the new darling of the semiconductor business. The area boasts less-expensive housing as well as a large worker pool at the University of Texas. Sematech, the government-sponsored consortium to facilitate tool-making for the domestic semiconductor industry, is located there, as well as Cypress Semiconductor Corp., AMD, Texas Instruments, Inc. and Motorola, Inc.

Although Intel will continue to be headquartered in Santa Clara, its facilities fade-out is of particular symbolic significance because it was one of the early semiconductor pioneers in the Valley. But that love affair seems to be over. Last summer, Intel said it would close its Livermore manufacturing facility by the first half of next year and announced plans in October to build a \$400 million plant near Dublin, Ireland, that would include chip production.

Although Intel's Santa Clara plant will be only 10 years old next month, it manufactured 100 mm silicon wafers rather than the 150 mm wafers now being emphasized to yield a greater number of chips, said Intel spokeswoman Karen Nalley. The plant will instead be converted to a manufacturing support unit, where testing, assembly and research projects are conducted.

Manufacturing will be transferred to facilities in Albuquerque and Rio Rancho, N.M. Nalley said she is optimistic that the plant's 400 employees could be repositioned within the company as the phaseout occurs in the next 12 to 18 months.

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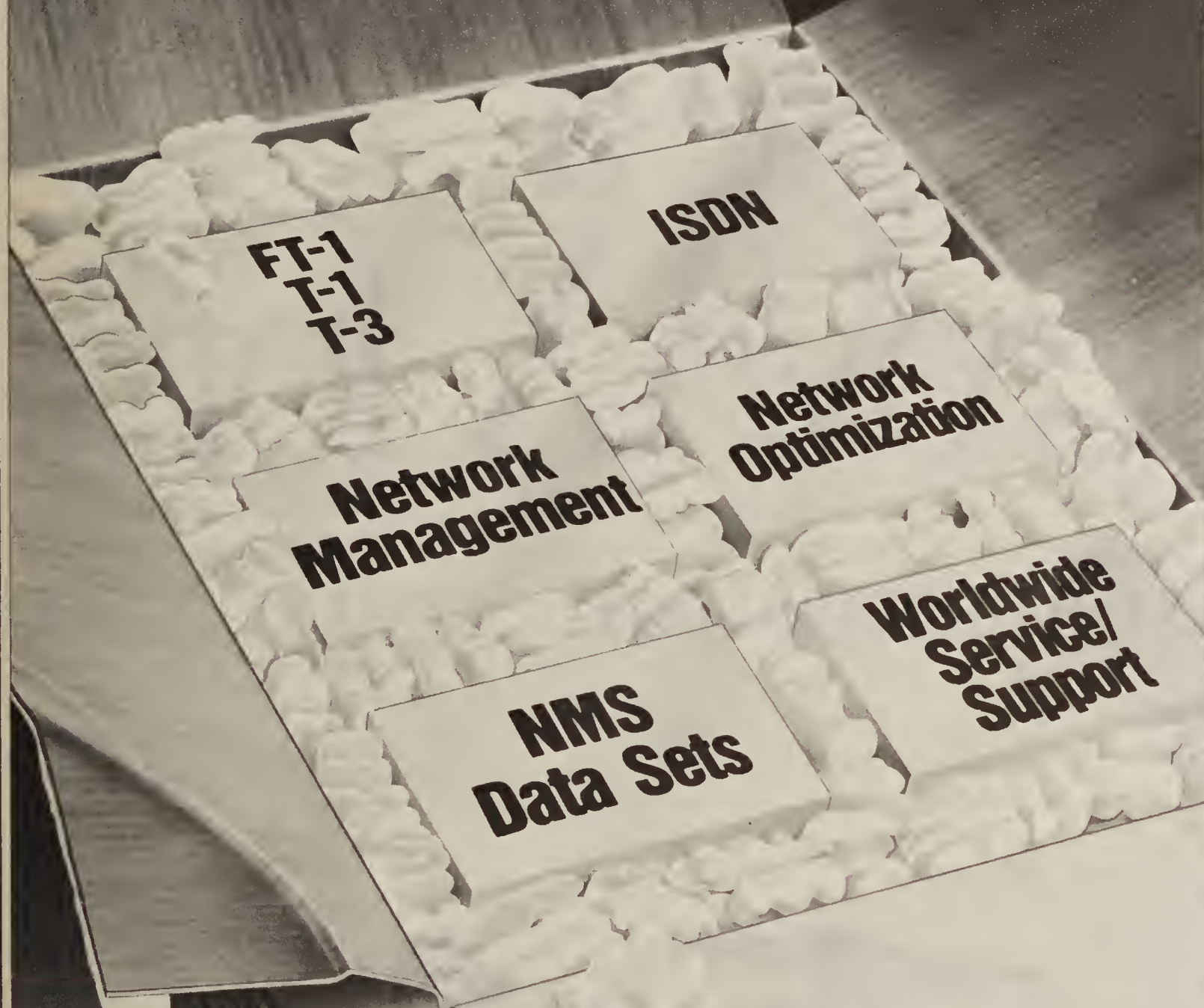
DG brings Unix to two lines

WESTBORO, Mass. — Data General Corp. last week announced Unix versions of its Interactive Cobol (Icobl) and Business Basic programming languages for its industry-standard Aviion and Dasher/386 lines.

The Unix runtime versions, available 30 days after order and priced from \$295 to \$2,950, will give DG end users access to more than 750 applications, company officials said.

The Unix products produce a machine-independent pseudo code file that runs on either product family, product manager Paul Norman said. That means applications written purely in Icobl or Business Basic for Nova or MV/Eclipse systems will run on the Aviion and Dasher lines without recompilation or conversion.

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Service fee

FROM PAGE 1

opportunity for them," said Jack Cooper, president of CSX Technology, the IS division of CSX Corp.

"We haven't evaluated it yet, but my reaction is we'd be a bit stodgy in paying for it. We'd look at it as something that should

be provided," Cooper added.

Another user, who requested anonymity, said the concept of Softwarexcel would not fly in his shop, which is already getting what it considers to be good service at no extra cost.

"It sounds just like the way we do business now," the user said. "When we need their resources, they are very forthcoming. But that is the market-

ing people, not NSD."

However, according to Alan Hu, director of software services at IBM's NSD, the Softwarexcel package will not bring any extra cost to the users. For one thing, the same support that was once rolled into software sales will still be given to users free of charge. The difference is that the old level of support has been renamed Softwarexcel Basic.

For another thing, Softwarexcel brings users several options they never had before. Most of these, however, come with the top-of-the-line support, called Softwarexcel Custom.

IBM would not provide pricing on this, however, claiming it will determine individual prices depending on a customer's needs. But the next level down, called Softwarexcel Extended,

has far fewer features than Softwarexcel Custom has, and its prices range from \$600 per month to \$3,500 a month.

It's answers we want

With all three levels of Softwarexcel, IBM will not provide actual software programming services but will give users answers to problems. In the case of Softwarexcel Custom's third-party software option, the IBM representative will go to the other vendor, if necessary, to get problems ironed out, Hu said.

The intent is to act as a single point of contact for all software issues, regardless of who the vendor is.

The custom service would also put an IBM software troubleshooter at a customer's site on a full- or part-time basis. The service also provides a streamlined approach to maintenance fixes, which IBM issues on tape and can be a time-consuming task to install.

"The problem is that customers have gotten used to getting some of these things at no additional charge," said Rebecca Segal, an analyst at International Data Corp. in Framingham, Mass.

"The system engineers were considered to be part of the marketing group. IBM is now saying we are putting together these packages, and now you have to pay for them. I think they will have a tough time convincing customers," she said.

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Helping hand?

Along with Softwarexcel, IBM last week introduced a Help-desk service for microcomputers that could wind up being a bear of a job.

IBM said the End User Support service will support Personal System/2s, Personal Computers, IBM-compatible microcomputers and Apple Computer, Inc. equipment as well as handle queries on the wide variety of software on these systems.

"Individual vendors have trouble keeping a staff that can address all the questions," said Rebecca Segal, an analyst at International Data Corp. in Framingham, Mass. "I question their support ability. I think it'll be very difficult starting up."

According to IBM, pricing per workstation would be \$15 per month at a 1,000-workstation account and \$20 at a 500-workstation site.

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EDITORIAL

Auld lang syne

Holly, eggnog, mistletoe,
What better time to stop and show
Our thanks for those both far and near,
Who gave to us some yucks this year.

To Cullinet and MSA,
We'll miss them more than we can say.
But how can 'sprit de corps compare,
With bids of 18 bucks a share?

To IBM whose storage blunder
Almost spawned a diskless wonder.
To program trading's endless runs
At pulverizing pension funds.

To DEC and Wang and, yes sir, Prime,
Who had themselves a dreadful time.
Till IBM put forth its mission:
No layoffs, just more attrition!

To outsourcing, which some do fear,
Because they hold their MIPS so dear.
But few resist when ol' Big Blue,
Says 'Have I got a deal for you.'

To Kodak's salve for IS welts:
Give it all to someone else!
And those who sought to stem their grief
By outsourcing the IS chief.

To Ashton-Tate, where all seemed well,
'Cept for that gosh-darned SQL.
To Gates whose charm and derring-do,
Have turned his Windows shades of blue.

To OSF and ATT
Whose antics baffled you and me.
Did OSF lose? No, hey, wait!
We've just *begun* to arbitrate.

And speaking of the legal crew
How 'bout those guys at Fujitsu?
Code not seen by other men
Is theirs for just a zillion yen!

To virus fiends who had us mugged,
Who told us our PCs were bugged.
But come the 13th, thank the lord,
Our only fear was being bored.

To EISA and the MCA,
That arcane little tete-a-tete
Led us to ask our erstwhile guides,
What good's a bus if no one rides?

To Cray whose woes the Feds did ease,
By stiffing universities.
To Tokyo, which heard our hollers,
And buys New York with U.S. dollars.

To 486s, noble chips,
and all their zippy whiz-bang MIPS.
To Intel, Sun and Motorola
To disk drives and the disk controlla!

To one and all our flag's unfurled
It's a mad, mad, mad computer world!



NEWS ITEM: Hackers exploit corporate phone networks to conduct illegal business.

LETTERS TO THE EDITOR

The advantages of growing our own pool of technical talent

In response to "Time to open U.S. doors to world's IS talent" [CW, Nov. 6], I could hardly imagine a more self-defeating policy than to institutionalize by means of a targeted immigration program the practice of supplementing our growing shortage of technical workers by importing the needed skills from abroad. How long do you think foreign countries would stand for sustained raiding of their talent — assuming, unrealistically, that such skilled workers would continue to flock to our shores?

Immigration of this magnitude is no substitute for a strong and viable educational system to train our own youths. Relying on the importation of foreign computer technology talent is another variation on the principle of robbing Peter to pay Paul.

We are faced with an inefficient, expense-bloated educational system at the elementary, secondary and undergraduate levels. We can continue to mask this problem only until we can no longer attract foreign talent or we become just another have-not nation. Engineers and scientists don't flock to Malawi, nor are we overwhelming the world with made-in-America PCs. Our deficiencies in education will soon overshadow our ability to attract foreign scientists and fail us in our need to survive the 1990s and beyond.

It will not suffice for our society to now say, "Give us your skilled, your talented to care for our tired and needy." We must assume responsibility for our own survival and needs on both the technical and social planes to compete in a world of tomorrow.

*Paul C. Chakonas
Newtonville, N.Y.*

After reading Carl Shusterman's article on opening up immigration laws for information specialists, I felt that an alternate viewpoint should be voiced to your readership.

Shusterman's article equates the problem of a technological skilled labor shortage to that of the migrant farm worker shortage in Southern California a few years back.

I recently had the experience of working for a company that resorted to taking on consultants for a very low per diem from a consulting firm that sponsored the relocation of programmers from India.

These programmers were set up with lodging in a local YMCA by the consulting firm and paid a very low wage. By U.S. standards, many professionals in our industry would not want to be treated as common laborers.

From the programmers' perspective, they would have done anything to have an opportunity to work in the U.S. and did not know of the average salary for programmers and the cost of living in the Northeastern part of the country.

Many countries treat programming as a more "blue collar" type of profession, usually requiring enrollment in a trade school instead of obtaining a college degree.

The days of having "coding factories," where programmers code subfunctions of a larger application, not needing any knowledge of the business environment or application they're coding for, have been eliminated by fourth-generation language packages and databases, which have eased the programming drudgery but require specialized

skills more complex than just knowing the syntax of a programming language.

I am highly in favor of the new bill that would require a graduate-level degree to obtain a professional visa status. Our nation is in need of the highly specialized computer sciences: artificial intelligence, automatic parallelizing compiler development and so on. These backgrounds are not found in the programmers that have been coding accounts payable systems in Cobol with little secondary education.

This nation should be supporting research in schools to keep the U.S. on the leading edge of software development, not importing cheap labor to bring down the standard of living for the profession.

*John Spicijaric
Senior Systems Analyst
Bellerose, N.Y.*

CORRECTION

The Dec. 4 editorial, "Warm fuzzies," incorrectly stated that Computer Associates International, Inc. had scrapped plans to discontinue a mainframe security system in 1987 because of user backlash. That action was taken by Uccel Corp. prior to its acquisition by CA.

Computerworld welcomes comments from its readers. Letters may be edited for brevity and clarity and should be addressed to Bill Laberis, Editor, Computerworld, P.O. Box 9171, 375 Cochituate Road, Framingham, Mass. 01701.

The changing role of the CIO

CHARLES CALLAN



At a recent senior management forum for top U.S. companies, 34 of 35 chief information officers initially sounded a raucous "No!" when asked if CIOs should be "business transformation officers." Only one brave soul expressed interest in taking a leadership role in using information technology to redefine critical business processes or drive organizational restructuring.

One of the naysayers explained his position: "Look, last year the turnover in this profession was in excess of 30%. If we try to be the driving force in re-drawing organizational structures, that rate would go up to 100%." For a brief moment, this seemed reasonable.

But suddenly, I was troubled. Many of the CIOs I know have invested much energy transforming their function from a service provider to a strategic partner with the business. These efforts are more than just window dressing. They are redefining information systems services.

Successful CIOs know that strategic partnership is not a rite of passage. It is earned by one's

Callan is a vice-president of Index Group, Inc. He specializes in business strategy and its relationship to information technology.

track record and the potential for adding real value. They've seen firms choose CIOs from the ranks of line executives.

Certainly, the job of the CIO is richer and more important than ever before. The CIO's main purpose is to ensure that technology resources provide maximum value to the mission of the business. Chief executive officers often don't know how to exploit information technology, and some of those who do believe that's what they pay the CIO to do.

But change is terrifying for most people. So, the more successful CIOs learn how to deal with others' fears — and their own. After more discussion, this group of CIOs began to describe what were, in fact, active leadership roles in many critical business transformations. They admitted that their earlier response was more an expression of strong uneasiness with the role than a repudiation of it.

So how are CIOs providing leadership in business transformation? I characterize their efforts in three ways:

- They are building relevant business dialogue.
- They are taking night rides on a Trojan horse.
- They are conducting a "let's get serious, folks" frontal assault.

Building relevant business dialogue. Successful CIOs take an active and serious role in the company's strategic

planning, pointing out creative ways IS can generate strategic opportunities. To do this, they draw business illustrations. They realize very few executives in today's competitive, commer-



STUART GOLDENBERG

cial enterprises have patience with elegant academic concepts or techno-babble. Instead, successful CIOs talk about relevant business impact — that is, how business could be improved.

These CIOs are also very good educators. Long ago, they stopped telling managers how important IS is. They package their education in ways that have relevance and impact on real

business needs. They provide educational experiences in which management is involved in the learning process.

Night rides on a Trojan horse. The second way CIOs create change is by doing it without a loud procession in the streets. They launch quiet experiments funded by their own

agement staff meetings.

The "let's get serious, folks" frontal assault. Successful CIOs foresee business vulnerabilities. They have a sharp focus on competitors and their technological capabilities and major developments.

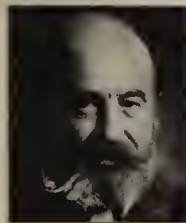
Most major changes in companies don't come because they'll be fun or nice — they come because the threat surmounts the fear, and flight turns to fight. Successful CIOs know cold the key technological developments in their industry. Successful CIOs pull the alarm when a new technology offers a competitive breakthrough to the business.

Leadership in CIOs requires that they be prepared to challenge the quality of the strategic thinking of the executive team, of which they are a member. They ask, "Are we reaching in the right direction? Are we reaching far enough?" Doing this requires that they cast off the timid shroud of their former service provider days and accept that they are equal members of the executive team.

Finally, CIOs leading transformation efforts have to add an understanding of organizational effectiveness to their knowledge of technology and MBA-like skills in business strategy. This enables them to be proactive about identifying opportunities for change. It means understanding not only how business processes can be realigned but also how and which technologies are changing people's workplace relationships. It means changing one's own mind-set.

One more time: Just say no to 'A Japan that can say no'

CHARLES P. LECHT



There's little doubt that the recent book *A Japan That Can Say No* by Sony Chairman Akio Morita and Japan House of Representatives member Shintaro Ishihara will be remembered a long time.

Published only in Japanese and translated into English without the consent of the authors, the book has created a storm of controversy because of its criticism of the U.S. In mid-November, Ishihara announced that he planned to lodge an official protest with the U.S. Congress for trafficking one of the more than 40 (his count) unauthorized translations and getting Americans all worked up about its contents.

I obtained a copy of one unau-

Lecht is an IDG News Service correspondent based in Tokyo.

thorized translation in Tokyo, and I must say it left me breathless. The book, a brief 74 pages, says the unsayable, thinks the unthinkable and concludes the inconceivable about the U.S.

Called the "say no" book in Japan, it exhorts Japanese people to say "no" to the apparently unjust demands placed on Japan by the U.S. According to the authors, the Japanese people are disposed to saying "yes" even when they mean "no," or at least to not saying "no" even if they think it should be said. This, the authors assert, causes grief in Japan's international relationships and may be at the root of today's growing trade unrest between the U.S. and Japan.

It is not hard to see why the book is provocative to Americans. It says such things as the U.S. has become a techno-colony of Japan through its own initiatives and that the firms most vociferous in their condemnation of Japan are the ones buying the most from it. And it adds that the

U.S./Japanese trade balance is American-made and American-controlled.

The first impression one has of the book is that there has to be a lot of resentment toward the U.S. in some Japanese leadership. However, it is not resentment on the part of Morita. Indeed, his intentions in letting his thoughts be published are patently noble and intended to help mend what he perceives as a family squabble.

On the trade issue, Morita says, "... there has been a steady increase of capital goods needed by U.S. manufacturers, such as semiconductors, computer memory devices and computer screens."

Morita points out that Japan is not forcing Americans to buy anything. How could it? Americans want Japanese products in preference to their own because of Japanese creativity and quality. We have only to realize that the transistor, invented in the U.S. by AT&T, made it to the U.S. marketplace only in hearing-aid devices until Sony had the idea of using it in radios.

Morita notes that the reject rates for Japanese-made semiconductors are less than half of

those made in U.S. factories. He says that this explains why all the U.S. computer manufacturers have been and continue to be buying up a storm in Japan, shutting down domestic semiconductor plants and/or shifting their production to the Japanese archipelago despite the high yen.

It is in Ishihara's words that a full measure of under-the-surface, but real, anti-U.S. sentiment is expressed. Ishihara says that it is only the U.S.' thirst for military superiority over the Soviet Union that keeps it allied with Japan. He says that such superiority could not occur without the Japanese semiconductor. He suggests that the U.S. might even reoccupy Japan if it stopped producing semiconductors for armaments or if Japan decided to treat the Soviet Union equally.

Ishihara's remarks are most disturbing when he offers his proof that the U.S. is fundamentally racist and that this guides its policy in the Orient. For example, he says, "It seems that in their minds [Americans], even the Soviets are more trustworthy than the Japanese. American racial prejudice toward Japan is very fundamental, and we should always keep it in mind when

dealing with the Americans."

Ishihara offers the Toshiba radio-bashing episode of last year along with the unjust World War II incarceration of American-Japanese citizens and the atomic bombing of Japan as examples of U.S. racial prejudice. As shameful as these may be in U.S. history, one cannot help but feel that he's lumping apples with oranges in mentioning the latter two along with the former. Since he doesn't list such facts as the wanton massacre of Chinese citizens in Manchuria by Japan during WW II and the systematic annihilation of European citizens by Germany and the Soviet Union, one might be led to conclude that he thinks only Japan was the victim of the global madness that prevailed at the time.

In reading the "say no" book, Americans must remember that its authors are but two individuals in the 120 million-plus population of Japan, that they do not represent all Japanese thinking by a long shot, and that there is an incredible amount of good will in Japan toward the U.S. — and that in the balance of bashing between Japan and the U.S., the U.S. is still far ahead. We should all say "no" to this kind of stuff.

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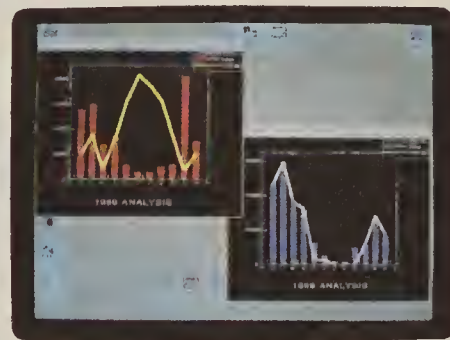
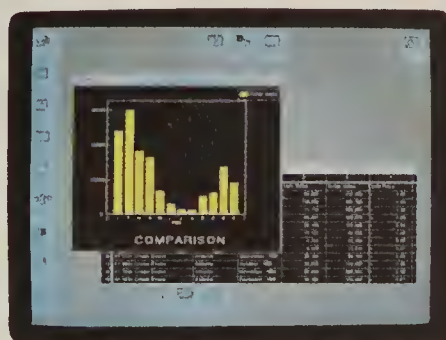
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Aiming at an unrepository



At a Knauer DB2 User Group meeting held in New York early this month, Dana Marks, a senior planner at IBM's Santa Theresa Laboratories and a member of the Information Resource Dictionary System (IRDS) standards committee, gave 300 DB2 users a report of that committee's progress toward reaching a repository standard.

It does not look good, and I don't think it matters.

"Standards are not developed by committees," Marks said. "Standards are proposed by individuals on the committee, and the rest of the committee sits back and looks at it and tells you what's wrong with it."

According to Marks — and his statements are corroborated by common wisdom and indus-

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Inside

- Wang's Freestyle imaging system helps law firm fight time losses. Page 25.
- Nixdorf pulls in Unix Tandem. Page 25.
- NCR goes standard with image products. Page 31.

Going Sequentially smaller

BY JEAN S. BOZMAN
CW STAFF

SAN FRANCISCO — Sequent Computer Systems, Inc. will announce a down-sized version of its on-line transaction processing Symmetry Series at next month's Uniform '90 show in Washington, D.C., Sequent President Scott Gibson told *Computerworld* recently.

The product, to be priced from \$30,000 — about one-third the price of Sequent's larger S 27 computer — is aimed at multiple-site applications run-



Sequent's Gibson goes for smaller Symmetry

ning Sequent's Dynix version of Unix, Gibson said. Sequent's products now range in price from \$100,000 to \$1 million.

When asked to position the new machine, Gibson said it would be a lower-priced entry point for users such as retail chains and hotels. Those users have traditionally have collected sales information from many locations and shipped the data during off-hours over networks to central-site computers for next-day "snapshot" access.

Gibson said that with the new Sequent systems, firms will be

able to update databases more frequently.

The point-of-sale terminals now used in most stores cannot communicate effectively with the central-site computers on a real-time basis, Gibson explained. "But the retail chain's buyers, for example, want to know what's selling and what's not selling so management can make business decisions on an immediate basis," he said.

The new hardware will be sold with relational database management software from several vendors, including Oracle Corp., Ingres Corp. and Informix Software, Inc., Gibson said. Applications software that will be packaged with the new systems will feature an X Window System interface and the Motif graphical user interface for Unix ma-

chines, he added.

The smaller Intel Corp. 80386-based Sequent systems will be completely binary-compatible with the Symmetry machines, which are built on multiple 386 microprocessors. However, unlike the older Symmetry systems, the new model can start with a single processor. Gibson claimed that the same magnetic tapes can be loaded on either machine. Sequent's S 27 computer can support up to 10 CPUs, while the S 81 computer can house up to 30 CPUs.

Symmetry was designed by Sequent's first independent business unit, the year-old Subsequent division, which has a staff of 35. Subsequent is headed by Dr. Gael Curry, a former Xerox Corp. designer who specializes in user-friendly interfaces, and by Bob van Steenberg, who helped design the NCR Corp. Tower minicomputer, Gibson said.

Traders to get Access' real-time spreadsheet

BY ROBERT MORAN
CW STAFF

NATICK, Mass. — Access Technology, Inc. recently announced that its 20/20 spreadsheet will now be able to capture data as it occurs, giving traders in banks and brokerage houses a timely edge over batch-bound systems.

According to the company, the software, called the 20/20 Realtime Spreadsheet, eliminates the need to re-key data

into a spreadsheet for analysis.

Further, several systems integrators for the trading floor — Micrognosis, SPC Software Services, Inc., FTTalphamerics, FD Consulting and Aregon International — have developed drivers to the spreadsheet.

According to beta-site user Brian Slater, a vice-president in the global securities and foreign exchange unit of Chemical Bank in New York, the new software, which is connected to SPC's Pricewatch, "gives traders a

constantly running model of the complex information used in trades." As a result, he said, Access 20/20 obviates the need to batch update spreadsheets, gives traders on-line information in spreadsheet form and encourages users to use the spreadsheet information more frequently.

Trading monitor

The software monitors trading conditions in designated cells and alerts traders through messages, cell highlighting and user-defined signals to shifting conditions within the market. In addition, the users can set schedules in real time, at fixed intervals or with every recalculation. Users can also specify how to

store present and previous market values — a function that the company said will aid in calculating moving averages and in performing time series analysis.

The 20/20 Realtime Spreadsheet is currently available for VAX computers running under the VMS operating system. The software costs \$2,400 for a Vaxstation 2000 and Vaxstation 3100. Prices for other VAX/VMS systems are based on the size of the processor and range from \$7,800 for a Microvax 2000 to \$42,000 for a VAX 8600.

The company said that it will offer 20/20 Realtime Spreadsheet on Unix-based workstations by the second quarter of next year.

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Miami law firm shows its Freestyle

ON SITE

BY MARYFRAN JOHNSON
CW STAFF

MIAMI — From her enormous window overlooking glittering Biscayne Bay, Pat Cash watched the flock of turkey vultures who circle the building every winter afternoon.

"The big joke around here is that they're unemployed lawyers," said the MIS director for Steel Hector & Davis, one of Florida's largest law firms.

The vultures outside the building may indeed be looking for something to occupy their time. But the 150 corporate and criminal attorneys within are far more interested in whatever *saves* them time, Cash said with a smile.

Enter Wang Laboratories, Inc. and its Freestyle office imaging system.

Since the June installation of 90 sets of Freestyle along with nearly \$5 million of Wang hard-

ware, Steel Hector & Davis has become a showcase for Wang's imaging products.

Freestyle is an information management and communications system for creating, annotating and sending document im-



Cash says that Wang Labs 'impressed us'

ages over an office network.

"This is affecting the way we do business. It's a major philosophical change for us," Cash

said. "This is the first time we've automated anything other than word processing and accounting."

She estimated that the firm will save \$1.2 million this year alone in its average billing rate: "Users are telling me they gain at least a half-hour daily."

Rather than dashing around searching for other staff members, waiting in line at the facsimile machine or queuing up at the word processing center, the firm's 220 users now stay in touch via personal computer keyboard.

Getting a message to a senior partner — a process that once took days — is now done "in an instant, with no screwups," said Jay Martus, the attorney who negotiated the sale and became a self-described "PC freak" in the process.

"You know the memo is written, filed and backed up on the VS [10000 minicomputer in the data center]," Martus said.

The company recently doubled its number of Freestyle packages to 200 and upgraded its PCs from Intel Corp. 80286 machines to 80386 boxes with 42M-byte disk drives. Freestyle

users now retrieve and edit text images, route documents and send voice-mail messages.

"This saves so many steps," Martus said. "It speeds up deal making. When I need to send off a memo to all the players in a computer deal, for example, I just create a custom distribution list that includes the vendor, the cabling company, the lawyers and the administrators."

A core group of 30 lawyers now gets the most benefit from

Freestyle, he noted, but familiarity with the system is spreading throughout the five floors occupied by Steel Hector & Davis.

The two Wang VS10000 minis in the data center — nicknamed Yin and Yang — are used as servers for file storage and word processing. All of the legal software comes from Custom Software Systems in Seattle.

Making the transition from an aging Hewlett-Packard Co. minicomputer to the Wang systems entailed manual conversion of 36,000 client records, 16,000 outstanding invoices and 20,000 cost transactions, Cash said.

Ignoring Wang's woes

Wang's well-publicized financial troubles did not deter the firm from picking the minicomputer maker after a two-year examination of office integration products from eight different vendors. Wang's \$3 billion in sales revenue, commitment to research and development, imaging technology and its office-oriented products "impressed us," Cash said.

"We think of Wang as fore-runners who will survive the [industry] shakeout," she said.

As a major customer and the first commercial installation of Freestyle, Steel Hector & Davis

enjoys enough clout with Wang's research and development department to alter new releases of the office imaging system. One example is the tiny twirling BMW icon, which originally spun in the corner of the screen.

"It was annoying," Cash told the Wang designers, "and it took about five million instructions to twirl for 30 seconds."

Not so coincidentally, the BMW is gone from Freestyle 1.2.



Martus is a self-described PC lover

Nixdorf pulls in Tandem on new Unix

BY J. A. SAVAGE
CW STAFF

Nixdorf Computer Corp. recently signed up to resell Tandem Computers, Inc.'s as-yet-unannounced fault-tolerant Unix-based computer.

The computer, known internally at Tandem as "S-2," is based on reduced instruction set computing (RISC) architecture from Mips Computer Systems, Inc. It is expected to serve medium- to low-end requirements. A product is expected in the first half of next year, possibly as early as January.

Meanwhile, there were reports recently that AT&T will also sign an OEM deal to buy the S-2.

Nixdorf expects to sell it to those users in its current niche markets, primarily retail, who need fault tolerance.

While Tandem sticks to selling hardware, the company is looking to Nixdorf to provide complete systems to users with Nixdorf's software, according to Richard Bailey, manager of Unix strategic relations for Tandem.

The S-2 fits the emerging fault-tolerant RISC market, whose biggest customers will be telecommunications companies, with government entities and the European market trailing close behind, according to John Jones, an analyst at Montgomery Securities in San Francisco.

If both the Unix computers and Tandem's proprietary operating system computers are integrated for applications, both companies would be involved, but Nixdorf would be the prime sales contractor, Bailey said.

A user-friendly relation

BY JEAN S. BOZMAN
CW STAFF

MENLO PARK, Calif. — Informix Software, Inc. jumped on the bandwagon of user-friendly interfaces for relational databases earlier this month. Informix-Quickstep, the company said, will allow end users to extract information from Informix database management systems without having to program in SQL.

Quickstep builds SQL statements based on user's menu-driven selections of DBMS data to be queried. It generates code in Informix's fourth-generation language, then translates that code into SQL statements for da-

tabase queries. Priced from \$360 for one user to \$2,280 for 32 users, Quickstep will be ready for several major Unix platforms by year's end, the firm said.

The interface could have an impact on the applications-backlog problem at user sites, Informix executives said. According to Susan Nurse, who manages Informix's product marketing, non-IS end users can "just fill in the blanks," while programmers can use the product to speed development.

One user who welcomes the user-friendly interface is Jim Anderberg, director of information services for the city of Augusta,

Continued on page 31

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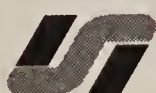
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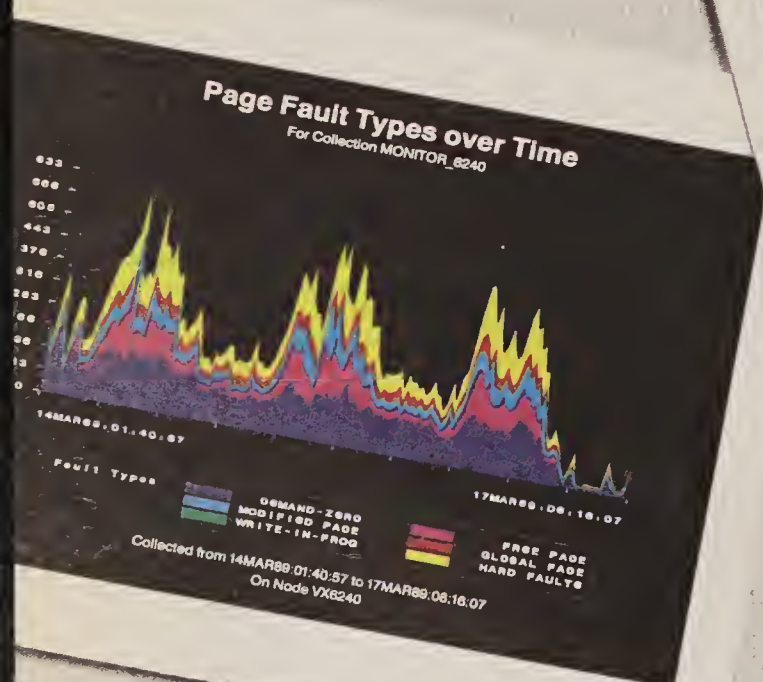
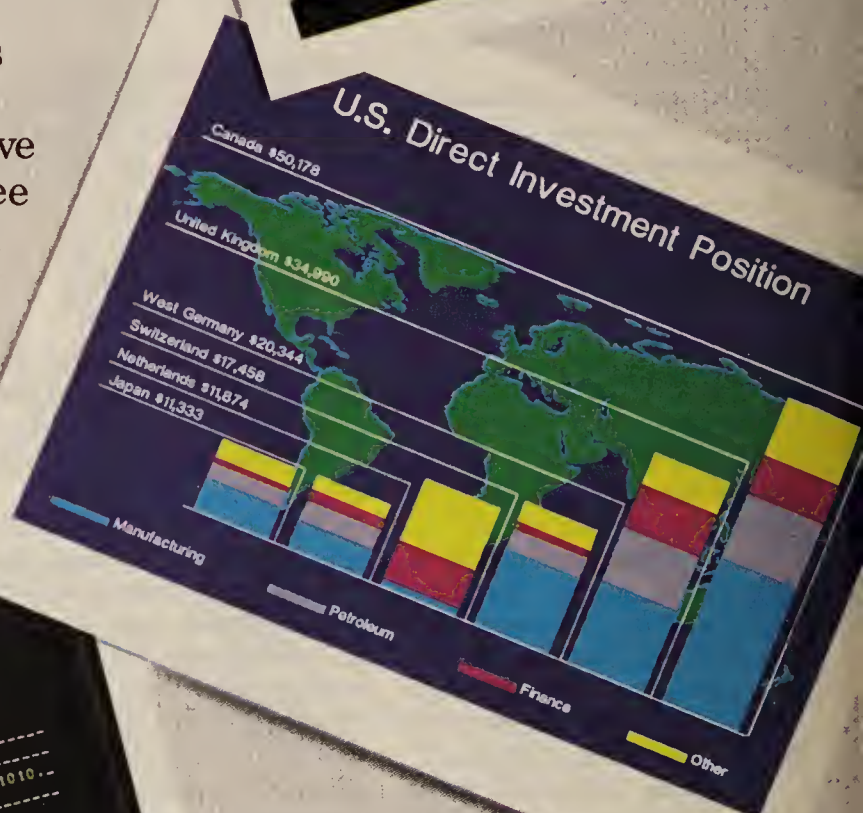
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CONTINUED FROM PAGE 23

try experts — that which gets standardized is that which is least objectionable to the majority of people on the committee. "We are all interested in a standard that will impact us the least," he said.

Marks had plenty of hard facts. As a committee insider with admitted — no, make that trumpeted — IBM biases, he detailed many of the inadequacies of the proposed standard.

Those inadequacies, all quite technical, are, according to Marks, "the least common denominator of what was useful in the late '70s and [will be] going into the '90s as our dictionary standard."

Before I get to what was really at stake, let me slam the door on the issue the way Marks did. Within the world of this standard, the International Standards Organization and American National Standards Institute diverge; they each use a different data model and a different access language.

With no promise of a bridge to span the rift, what is to be done? Nothing? Sit and wait?

No, don't wait, Marks said. Firms

IT'S THE SAME old world and the same old paradigm: IBM owns the standard.

should not wait for the entire repository or AD/Cycle before getting information into a dictionary, any dictionary, and begin working with the data model until it comes out right for them, he added.

Second, Marks added that organizations should not wait until the day they get the repository to put in DB2, because "there are things to be learned about running it in your environment."

From a discussion of standards to some advice on when to put in the repository and, of course, DB2. Is there something in the juncture that I missed?

No. Marks faced serious DB2 users, who have big IBM investments throughout the organization. They already knew where he and IBM stood and did not need to listen to the subtleties of argument.

They could therefore take his advice seriously and not have to fret over whether they would have to purchase DB2 and Repository manager, to say nothing of the alternate vendor strategies.

Organizations, he said, should work with their favorite vendors to make sure they will utilize the repository in a way that will allow them to get the real benefit of a repository manager environment.

Those benefits include a faster development life cycle and better code. But to get them will prompt changes. Marks said that "we are dealing with a brave new world where people are going to be doing things differently than the way they have done in the past."

I want to abuse the intent of the quotation, not because it isn't true but because Marks' conclusion and the way he reached it imply what we need to remember. It's the same old world and the same old paradigm: IBM owns the standard.

Moran is *Computerworld's* Mid-Atlantic News Bureau correspondent.

Teradata uses Charles River as middle man in server plan

BY J. A. SAVAGE
CW STAFF

LOS ANGELES — Joining a host of companies offering large-scale servers, Teradata Corp. earlier this month announced it will have a product in spring 1990 that will serve as a "middle man" between users and the company's large database machine.

Teradata will sell Charles River Data Systems, Inc. hardware to act as a server

and also to act as a client to Teradata's database engine, the DBC/1012.

"The problem for big corporations is being able to control data from the corporate data center to the department and from the department to the corporate data center," said John Jones, an analyst at Montgomery Securities in San Francisco.

The Charles River product, to be called Remote DBC from Teradata, will access the DBC/1012, which can hold 1

terabyte of information. "This way thousands of users can access huge amounts of information, without the high cost of direct lines into the database machine," a Teradata spokeswoman said.

Users send queries into the Remote DBC, and if it cannot answer locally, it will in turn query the main database, according to the spokeswoman.

The Remote DBC and the DBC/1012 are based on Intel Corp.'s 80386 processor. Both systems will also be running the Unix operating system, although Teradata's version is proprietary. Teradata claimed any compatibility issues will be resolved before the shipment date. The Remote DBC should cost between \$25,000 and \$500,000, according to the firm.

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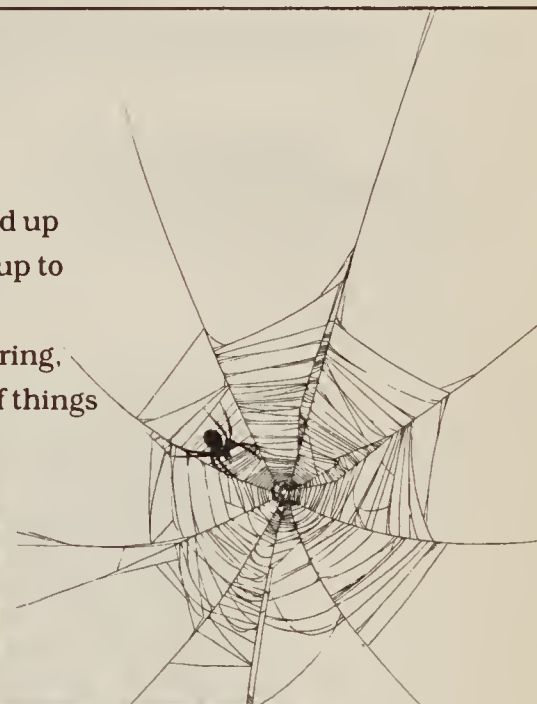


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User-friendly

CONTINUED FROM PAGE 25

Maine. Anderberg's department has been using Informix on Digital Equipment Corp. computers for five years. "I have a community of users coming to me, asking me to write reports," he said. "It's going to save me time in that I can give a class on how to use it, and the end users can go off and use it themselves."

Two of Informix's competitors also recently introduced user-friendly interfaces. The others are Ingres Corp.'s Simplify interface for Sun Microsystems, Inc. workstations and Oracle Corp.'s Hypercard-driven interface for Apple Computer, Inc. Macintosh computers. All three interfaces shield end users from SQL statements that are being generated "behind" the user-friendly screen.

The Informix product differs in that it is aimed at the installed base of "dumb" terminals attached to Unix minicomputers running Informix. In its first release, Quickstep's on-screen appearance is monochrome and menu-driven rather than icon-based.

In contrast, the Ingres and Oracle products are designed to be used with intelligent workstations or personal computers, and both products make use of icons and a full graphical user interface display. New versions of Quickstep, now under development, will provide a more graphical look and feel, she indicated.

NCR imaging plan adds to open system landscape

BY ELLIS BOOKER
CW STAFF

DAYTON, Ohio — NCR Corp. vowed this month to follow industry software and hardware standards, including open systems architecture, in a future line of imaging products targeted at financial applications. However, the company stopped short of announcing the specific products that will fill out the imaging line.

Analysts said NCR will go up against Unisys Corp., which recently unveiled its own imaging strategy and also targeted banking as a primary market.

NCR, which already holds patents in character-recognition and document-processing technologies, said its new products will focus on document management, item processing and office information systems. The company said its imaging components will enter testing at a number of major sites in the next few months.

In a statement of direction, NCR pledged support for the evolving CCITT compression and Office Document Architecture standards and said it would offer a wide range of communications options among NCR systems or among those of other vendors. In addition, NCR said it would support the SQL database interface, local network protocols and personal computer-based workstations.

Specific product categories mentioned by NCR include a document management system using an SQL interface and image item processing systems, as well as a point-of-deposit image-capture system.

NEW DEALS

Unisys deposits system in Venezuela

Banco de Venezuela ordered \$6 million worth of workstations, software and services from Unisys Corp. recently. The new branch automation system replaces IBM 4700 terminals, Unisys said.

PHH Corp. signed a \$2.2 million deal with Bull H. N. Information Systems, Inc. for a DPS 90 mainframe. The company will use the new mainframe with an installed DPS 90, which together will provide a redundant mainframe environment. PHH will use the system to manage its two major subsidiaries: PHH Fleet America, which provides services to busi-

ness automobile fleet companies, and PHH Homequity, which offers relocation services.

Nixdorf Computer Corp. said it beat IBM and NCR Corp. in a bid for a \$4.2 million point-of-sale (POS) system to Liberty House, one of Hawaii's fashion retailers. The system will consist of 670 POS terminals in more than 40 store locations.

Convex Computer Corp. won a piece of a multiyear, \$97 million contract from the National Aeronautics and Space Administration's Ames Research Center in

Moffet Field, Calif. Convex's portion initially calls for a \$1.25 million Convex C210 minisupercomputer. The firm's contract will go for three years, with an option to extend it to seven years, and will involve service, training and analysis.

The Florida Institute of Phosphate Research recently selected the SPANS geographic information system from Tydac Technologies Corp. in Arlington, Va., for use in evaluating the impact of phosphate mining and reclamation on Florida surface water and groundwater systems. The institute's four-year, \$1.3 million research project will ultimately produce information to help establish regulatory and industry standards for hydrologic analysis of mined lands.

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NEW PRODUCTS — SOFTWARE

Development tools

Meta Software Corp. has released Version 1.5 of Design/IDEF, its computer-aided system modeling tool developed to support the creation of IDEF activity and data models.

According to the vendor, the software can be used now to add behavioral information to an IDEF0 activity model for export to the company's Design/CPN simulation program for model execution and behavioral analysis.

The upgrade comes with revised documentation, and the single-copy price of

Design/IDEF is \$2,995.
Meta Software
150 Cambridge Park Drive
Cambridge, Mass. 02140
617-576-6920

V.I. Corp. has introduced Version 7.0 of Dataviews, its software for graphical user interface development on workstations running the AT&T Unix or Digital Equipment Corp. Ultrix operating systems.

The product reportedly can respond to data as it is changing in real time while simultaneously maintaining a dialogue with the operator via graphical input techniques. New features include the ability to

create application-specific input handlers interactively and an object-oriented approach for hierarchical grouping of screen objects, the vendor said.

The program costs \$17,700.

V.I.
Amherst Research Park
Amherst, Mass. 01002
413-253-3482

Applications packages

McCormack & Dodge Corp. has announced that its Millenium financial applications and tools will be available to run on Digital Equipment Corp.'s VAX 9000 mainframe machine.

According to the company, the software will be available immediately with

the first shipment of DEC's new computer. It includes general-ledger and accounts-payable applications, as well as computer-based training and self-study components.

Pricing ranges from \$7,600 to \$118,000 per application.

McCormack & Dodge
1225 Worcester Road
Natick, Mass. 01760
508-655-8200

An activity-based systems management tool for the Digital Equipment Corp. VAX/VMS operating environment is now available from Ergodic Systems.

Overseer Version 4.0 is a project accounting platform designed to support project accounting, chargeback and activity-based system management and administration. According to the vendor, it tracks user tasks, as opposed to user accounts, and the latest release offers identifier management and dynamic UAF linking facilities.

Pricing ranges from \$2,500 to \$10,000, and the software supports all versions of VMS from V4.4 onward.

Ergodic Systems
23666-A Birtcher Road
El Toro, Calif. 92630
714-380-9719

Utilities

Jensen Research Corp. has announced a job control language (JCL) and procedure cross-reference utility for use on IBM MVS, MVS/XA and MVS/ESA systems.

According to the company, Xref Plus offers users a complete overview of the interrelationships of JCL, programs and data sets. The program provides summary reports and does not require authorization, system hooks or any modifications to system code for installation.

A three-year license costs \$7,500 and includes maintenance.

Jensen Research
266 Harristown Road
Glen Rock, N.J. 07452
800-248-1230

Tact Software, Inc. has announced Tedit, a text editor created specifically for the Computer Associates International, Inc. IDMS/R environment.

The product may be used to edit any Integrated Data Dictionary (IDD) entity and features more than 100 XEDIT, ISPF and IDMS/R IDD-compatible commands. A text mode is included to provide users with word processor-like functions when entering data, and on-line Help facilities are also provided. It costs \$14,500.

Tact
Suite 20F
7 E. 14th St.
New York, N.Y. 10003
212-645-0446

Training

Traeger & Associates, Inc. has announced an education package that addresses relational database design and logical data modeling for IBM Application System/400 users.

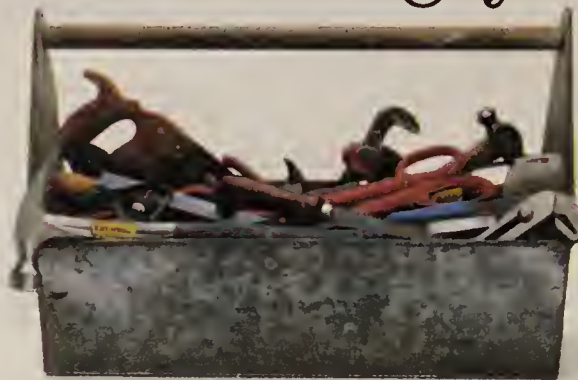
The offering includes three-day on-site instruction. Pricing is set at \$3,000 per course for up to 10 people, the vendor said.

Traeger & Associates
P.O. Box 1206
Sequin, Texas 78156
512-379-7709

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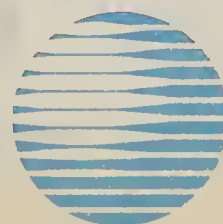
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B I T S

Howard Fosdick

The DBMS dire juncture



Most of information systems has embarked on a slow but steady migration to OS/2, based on the

32-bit Intel 80386 and I486 processors. The result is that the desktop database management systems (DBMS) marketplace is at a critical turning point. Long the province of Ashton-Tate's Dbase and its look-alikes, a major shift is in the offing for the desktop DBMS standard.

Yes, Ashton-Tate has stumbled. The company released an unacceptably buggy Dbase IV with an equally bug-laden SQL. Layoffs of a couple hundred employees followed, and there are indications that Dbase IV's approval rating is plummeting.

But these are not the real reasons for the shift in desktop DBMS. The real reasons are more substantive:

- OS/2 is wildly powerful compared with MS-DOS. Taking advantage of this new operating environment requires a new database architecture.
- IBM promotes OS/2 Extended Edition, along with its Database Manager, as a required component of *all* of its IS software strategies.

Continued on page 38

Searching for a friendly port

Using more powerful environments creates need for easier portability

BY RICHARD PASTORE
CW STAFF

Three months. One year. Two years. These are actual periods programmers have spent rewriting application code to run in new operating environments.

But "a matter of a few hours" is all it took one systems analyst to port a large database application from DOS to Unix. The time discrepancy does not stem from bionic typing fingers or Jolt Cola but rather a database management system (DBMS) with automatic porting capability.

With shops increasingly looking to migrate to more powerful and efficient operating environments, concern for easy portability looms larger. While many DBMS vendors offer packages that are portable or allow data transfer, a small number tout "automatic" application porting, generally with a focus on applications written in C.

Last week, Microrim, Inc. previewed its Vanguard family,

which reportedly allows applications written under OS/2 to run automatically without modification under Digital Equipment Corp.'s VMS, Sun Microsystems, Inc.'s SunOS and Apple Computer, Inc.'s Macintosh environment.

The Vanguard products will not make their debut until next summer, but some users are already working with tools from other firms.

With Filepro, a DBMS from The Small Computer Co. in Hawthorne, N.Y., "I can write an application in DOS and stick it in Unix without having to touch it," said Jim Rosenberger, assistant manager of systems administration at Chesapeake & Potomac Telephone Co. in Baltimore.

Only functions common to the various operating systems are automatically portable. Thus, a multitasking operation developed under Unix will not work if

the application is ported to DOS. Features that are specific to certain operating systems can be added to the application after it is ported.

The porting process requires operators to link the disparate machines by cable or phone lines. Then, a Filepro transfer utility takes over, porting the specified application code to the new environment. Filepro supports DOS, VMS/Unix systems and SunOS.

An application's look and feel, as well as its functionality, usually survive the porting process unchanged. "It looks and feels identical in each environment, even down to every keystroke," said Filepro user Lee Honeycutt, a systems analyst at North American Van Lines, Inc. in Fort Wayne, Ind.

Kevin McRee, a consulting senior at Andersen Consulting in Dallas, ported an application from a DOS-based local-area

network environment to VMS on a DEC Microvax II. He used Dataflex from Data Access Corp. in Miami, a DBMS that supports 50 operating environments, including 24 varieties of Unix.

"All we had to do was take the program in ASCII format, port it over from the PC to the DEC, recompile the program and rebuild the data files," McRee said. The application was up and running within one day. Rewriting the code would have taken six man-months, McRee estimated.

Sometimes a snag

There are occasional snags in these otherwise relatively silky transitions.

"At the very least, you have to deal with I/O inconsistencies," said Marshall Mosely, an analyst at Dataquest, Inc. in San Jose, Calif. "I would like to see tools that understand I/O conversions and tell you what you need to change."

McRee agreed that some tweaks were necessary. He had to adjust the screen code to accommodate the different sizes of the DEC and personal computer displays. He also noted that function keys may need reconfiguring.

For many users, the time and cost savings eclipse such minor hitches. "We haven't pinned it down to a dollar figure, but it would be phenomenal compared to Cobol recoding," Honeycutt said.

Inside

- Rating Santa's software games. Page 37.
- Telecredit's PCs know naughty and nice credit shoppers. Page 37.

Reach out and tap someone a phone note

BY RICHARD PASTORE
CW STAFF

Although we may sigh or groan when that ubiquitous phone-mail voice intercepts our attempts at live communication, this despair is nothing compared with the telephone frustration of speech- and hearing-impaired persons, for whom every syllable can be a

tremendous hurdle.

IBM's Personal Computer-based Phonecommunicator, introduced last week, is intended to ease these frustrations. A caller with a Touch-Tone phone can dial a Phonecommunicator user and punch out a message with the phone's keypad. The user at the other end of the line can then read the message on his PC

screen and type out a response, which is communicated to the caller by a voice synthesizer.

Besides ordinary telephones, the system can communicate with other telecommunications devices for the deaf.

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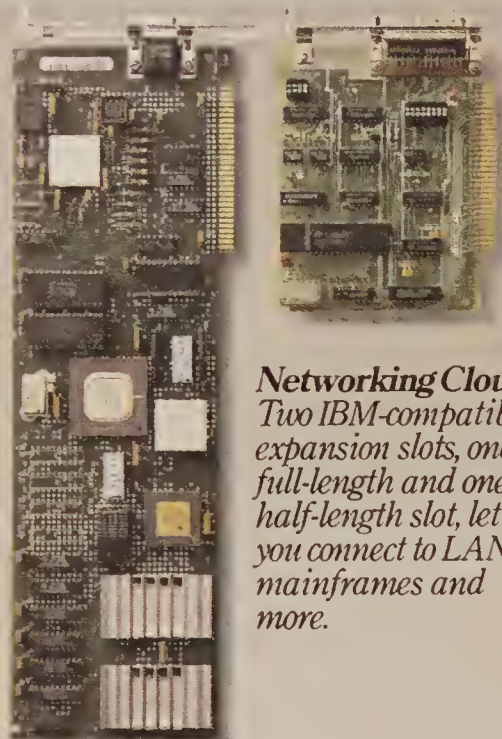
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Toshiba America Information Systems, Inc., Computer Systems Division

Deck the drives with software surprises

BY CHRISTOPHER LINDQUIST
CW STAFF

Bah, humbug!

Such is the response of many people when confronted with nonproductivity software (read that: computer games). From the earliest Tic-Tac-Toe program to the most advanced flight simulators, however, games have always been a part of our computerized culture.

Whether you are adding to a hidden subdirectory even utilities master Peter Norton could not find or trying to locate that elusive gift for a niece or nephew, here — in a step away from *Computerworld's* usual business orientation — is a rundown on some of this year's newer soft-

ware stocking stuffers.

My vote for the most to-the-point software title has to be Broderbund Software, Inc.'s *If It Moves, Shoot It!* There are no code wheels, no photocopy proof sheets of paper and no encyclopedic documentation. The entire game consists of four disks and a short instruction booklet.

The writers of this game believe in truth in advertising. If you see something moving on the screen, shoot it! There are no innocent bystanders to be wary of, no brain-twisting puzzles to solve.

If It Moves, Shoot It exudes the essence of arcade games, fast action and lots of it. Challenging game play, outstanding graphics and simplicity of design

are sure to make this one a favorite with all ages. (MS-DOS, Amiga)

Broderbund
17 Paul Drive
San Rafael, Calif. 94903
800-521-6263

On the opposite end of the spectrum is *Archipelagos*, a part of Britannica Software's Fanfare entertainment line of products.

Man's destruction of his environment is the premise behind this game. You take on the role of an environmental purifier charged with the task of reclaiming the earth. Use your powers to cleanse and replenish the land. Avoid the necromancers and tornado-like air cleaners. Use your wits to help destroy deadly ra-

dioactive nodes and obelisks.

Archipelagos is a truly unique and innovative game. The graphics are simply beautiful. The three-dimensional, scrolling view of the islands provides you with a perfect vantage point from which to witness the constant changes occurring around you. Plants grow, land becomes contaminated, the sun rises and sets. The world of *Archipelagos* is constantly in motion.

My only complaint about the game is its code-based copy-protection scheme that will cause premature blindness even for us legitimate users; purchase a magnifying glass if necessary. Your very first trip will be worth the cost. (MS-DOS, Amiga, Atari)

Britannica Software
345 Fourth St.
San Francisco, Calif. 94107
415-546-1866

Shareware receives an unfairly small amount of attention considering its many outstanding products. One of the best shareware programs in the entertainment genre is *Mah Jongg* by Nels Anderson. For anyone who desires quiet relaxation combined with strategy, *Mah Jongg* is an addictive combination. The wonderful EGA graphics bring this ancient game to life on your screen.

Remove matching pairs of tiles from the stack. Plot your strategy well and you may succeed in removing all 144, but this is far from simple. *Mah Jongg* is a true "minutes to learn, lifetime to master" type of challenge. Be warned: It is hard to stop after only one round. (MS-DOS)

Nels Anderson
92 Bishop Drive
Framingham, Mass. 01701
508-875-3618 (BBS)

If card games are more your style, *Hoyle's Book of Games* from Sierra On-Line, Inc. provides several classic card games, including *Gin Rummy*, *Cribbage*, *Crazy 8s* and *Klondike Solitaire*. Users can choose from several different opponents, depending on skill level.

Colorful, well-animated graphics and a sense of humor make this a highly enjoyable game that can be played any time. The easy-to-use interface allows it to be loaded and enjoyed in minutes. (MS-DOS)

Sierra On-Line
P.O. Box 485
Coarsegold, Calif. 93614
209-683-4468

Simcity, from Maxis Software, provides a dynamic city simulation so realistic that schools use it as a teaching tool, yet the program maintains tremendous playability. The object? Whatever

your heart desires. Build the city of your dreams or the slum of your nightmares. One thing is certain: It won't be easy. There are roads to build, police and fire stations to fund, land to zone and natural disasters to recover from.

Play can be as simple or as complex as you like. Speed up time and try madly to keep up with your city's growth rate or pause every month to assess the benefits and deficits of your last moves.

The code-sheet-based copy-protection can be confusing, but the thrill of seeing *Godzilla* appear to wreak havoc on your citizens makes it worth the effort. (MS-DOS, Mac, Amiga)

Maxis Software
Suite 113
953 Mountain View Drive
Lafayette, Calif. 94549
415-376-6434

If a city seems too small a challenge for you, *Mindscape's Balance of Power* will stretch your political and diplomatic skills to the limit.

This is definitely not a "dive right in" sort of game, especially at the higher skill levels. There is no "for those who hate manuals" cheat sheet. Once you take the time to read over the documentation, however, you will soon find yourself engrossed in the sheer depth of play this game has to offer.

You choose to become the president of the U.S. or the general secretary of the USSR. Distribute foreign aid. Keep an eye on world events. Do everything you can to raise your country's prestige. Just do not push too far, or nuclear confrontation and annihilation will be your only reward.

Copy protection consists of finding words from the documentation. A nice feature is that the first letter is given to you, removing almost any chance of providing the wrong word. (MS-DOS, Mac, Amiga, Atari)

Mindscape
3444 Dundee Road
Northbrook, Ill. 60062
312-480-7667

Politics too taxing a subject for your spare moments? Try *Jack Nicklaus' Greatest 18 Holes of Major Championship Golf* by Accolade. It is a well-wrought golf game that allows you to play on any of three courses, including one designed by the Golden Bear himself. Select your club, aim carefully, then test your reflexes trying to send the ball straight down the fairway (or slice it into the woods).

Realistic terrain such as side-sloping hills and elevated greens bring an added dimension. (MS-DOS, Amiga)

Accolade
550 S. Winchester Blvd.
San Jose, Calif. 95128
408-985-1700

PCs speed credit authorization process

ON SITE

BY RICHARD PASTORE
CW STAFF

TAMPA, Fla. — You wouldn't think a personal computer has the final say-so on your holiday gift purchases. But for millions who use plastic to buy their Nintendo Power Gloves or toaster ovens, Telecredit, Inc.'s PCs will determine whether they leave the store with a gift or leave in a huff.

Telecredit offers credit card authorization services to client banks and credit unions that issue Mastercard and Visa cards. Its PC-based authorization system, located at headquarters here, is celebrating its first holiday shopping season. Last year, a Tandem Computers, Inc. Nonstop II ran the show. This year, Telecredit downsized to improve price/performance. But in return, it has sacrificed database redundancy.

The PC's performance advantage crystallized the day after Thanksgiving, the Mount Everest of the year's range of shopping activity. The PCs processed 21 transactions per second. The former system would have logged only 12 per second, said Shashi Kapur, Telecredit's vice-president of telecommunications and PC development.

"We would have had to nearly double our Tandem capacity to do what we did this year," according to Kapur.

Though the Nonstop II was designed for upgradability, "we can upgrade the PC system more easily and a lot more cheaply," said C. Richard Crutchfield, vice-president of MIS. Indeed, the PCs operate at about 1/20th the cost of a functionally comparable Tandem-based system. (Remnants of the Nonstop II have since been pressed into commu-

nications service in Telecredit's voice-authorization division.)

The PC setup consists of 10 IBM-compatible boxes based on Intel Corp.'s 80286 chip. A database of 2.8 million cardholder records is divided equally among the PCs.

When a cardholder charges a purchase, the authorization request is routed through a Visa or Mastercard switching station over leased lines to the particular Telecredit PC with that cardholder's record.

Telecredit checks out the card's validity and available balance, relaying back its approval or denial.

The system continually updates the master database, which resides on the firm's Amdahl Corp. 5860 mainframe. The PCs are linked to the mainframe, one another and Visa and Mastercard via Intel 80186 communications boards, modems and dedicated lines.

The biggest challenges of the Tandem-to-PC transition were software-related. Converting the homegrown applications software from proprietary Tandem logic to Intel's iRMX multitasking environment required a year's labor, Kapur said.

But the most difficult part was writing all-new communications software to take the place of Tandem's built-in capabilities. "We had to learn how to distribute files and write software for communication," he added. "These PCs don't talk to each other that well. Now they all communicate, but only after a lot of development."

One problem remains un-

solved: The PCs do not offer the redundancy and fault tolerance of the Tandem system.

"When a transaction comes in, it is targeted to the particular PC that contains that record," Crutchfield explained. Theoretically, "if that PC is down, the transaction can't get processed."

There are safeguards. Each PC has primary and backup external disk drives. There is also a spare PC waiting in the wings. If a PC dies, "we can plug it in and be up and running in a couple of minutes," Crutchfield said. So far, the system has performed admirably; uptime is better than 99%, Crutchfield said.



Telecredit's Crutchfield seeks upgradability

Still, it is not enough. "We have no revenue if the system is not up and running," Crutchfield emphasized. "If we go down, the whole company is down."

With this in mind, Telecredit and Intel are developing a local-area network design to function under iRMX. Linked by a LAN, every PC would have equal access to the entire database. Kapur said that a beta-test version should be ready the first quarter of 1990.

The PC is gradually infiltrating other areas of Telecredit's business, mainly to lighten the load on the mainframe and the check authorization division's Tandem TXP.

"In the future, we will do a lot more cooperative processing between the PCs and the Tandem," according to Kapur. "And way out in the future, the PCs will do all the processing; we won't need a Tandem."

Fosdick

CONTINUED FROM PAGE 35

To address technical issues first, comparing OS/2 with MS-DOS is like comparing the space shuttle with a bi-plane. Just look at OS/2 — multitasking, coprocessing potential, 16M bytes of random-access memory, hundreds of megabytes of disk storage, superior graphics and an icon-based interface.

With its kernel based on SQL, IBM's Database Manager extends the database capabilities underpinning this environment. A code translator from some other language to SQL will not do because of the role of the access-path-selection optimizer in truly relational systems.

Industrial-strength utilities are fundamental, as are the transactional facilities that are taken for granted in the IS environment. These features include locking, concurrency, logging and recovery. Multitasking and concurrency are as important to the single-user workstation as they are to the local-area network environment.

Critical to bringing desktop machines into full-fledged participation in IS is some sense of compatibility with the predominant, pre-existing IS environment. Trained programmers are scarce, and there are only so many languages that they can learn. Standardizing on SQL, along with the relational programming techniques common to minicomputers and mainframes, is key to compatibility.

From the technical standpoint, the bottom line is that the OS/2 Database Manager is at least competitive in every criteria for DBMS evaluation, while its strengths herald the advent of new desktop technology. The power and sophistication of this "database engine" admirably fulfill the new requirements of the OS/2 environment.

However, establishing market dominance is more a marketing phenomenon than a technical one, and this is where IBM wins in spades. IBM is playing all its strategic cards to ensure that IS adopts OS/2 Extended and its Database Manager as its standard desktop DBMS.

Do you want to purchase Officevision, IBM's first Systems Application Architecture (SAA) application? You must

run OS/2 Extended and its Database Manager on your desktop to get the full power of this product.

Getting into distributed DBMS? Linking PCs to mainframes requires the OS/2 Database Manager if your mainframes run DB2 or SQL/DS. IBM's plans for distributed databases are structured to provide competitive advantages to "all-Blue" accounts.

Impressed by the computer-aided software engineering (CASE) environment IBM unveiled in its AD/Cycle announcement? You'll have to run the OS/2 Database Manager on your workstations. Cooperative processing forms the basis of IBM's proposed CASE environment, and this is implemented only on workstations running OS/2 Extended. Even the lesser parts of IBM's Sept. 19 announcements require the OS/2 Database Manager. CSP 3.3's Programmable Workstation Feature and ISPF/PDF 3.2's Workstation Platform are two examples.

SAA central to strategy

IBM's ace in this marketing strategy is SAA. IS wants a high degree of compatibility among software products running on different platforms, and the Database Manager provides it with the dominant relational DBMSs (DB2, SQL/DS and SQL/400).

It is not just that products like Officevision and AD/Cycle require interoperative database management systems; it is that the advantages of compatibility require compatible products. This is how IS can reduce learning curves for both technicians and users and gain code portability.

While IBM still claims to sell OS/2 either with or without the Database Manager, most suppliers no longer carry OS/2 Standard Edition. The great majority of IS purchasers opt for the Extended Edition and accept the Database Manager as a bundled DBMS. Do you think many will buy another? Voila! A desktop DBMS standard is born.

Fosdick is an industry analyst in Villa Park, Ill., and author of several books on OS/2.



UDS V.32 Modem Technology Goes to the Head of the Class

Beginning with a very early entry into the V.32 arena, Universal Data Systems has established a clear price/performance edge. Superior design and product performance have been documented by leading trade publications.

Latest to recognize UDS leadership in V.32 performance is *PC Week*. The publication tested UDS' new V.3225 against six

major competitors. The result: UDS tops the field in weighted average score for five important parameters! *PC Week* cites the V.3225's "blazing speed, plus excellent front panel menu and status display" as evidence of the modem's merit.

In earlier evaluations, *PC Magazine* honored the original UDS V.32 with an Editors' Choice Award and referred to V.3225s as, "the last modems you'll ever buy

because they make optimum use of both voice phone lines and the PC's serial port."

Besides technical leadership and outstanding performance, every modem in the UDS V.32 family offers **unconditional** compliance with the full V.32 standard. Learn how the UDS commitment to V.32 can increase your datacomm throughput over dial-up lines: contact Universal Data Systems, 5000 Bradford Drive, Huntsville, AL 35807-7002. Telephone 205/721-8000; FAX 205/721-8926.



Universal Data Systems



MOTOROLA INC.

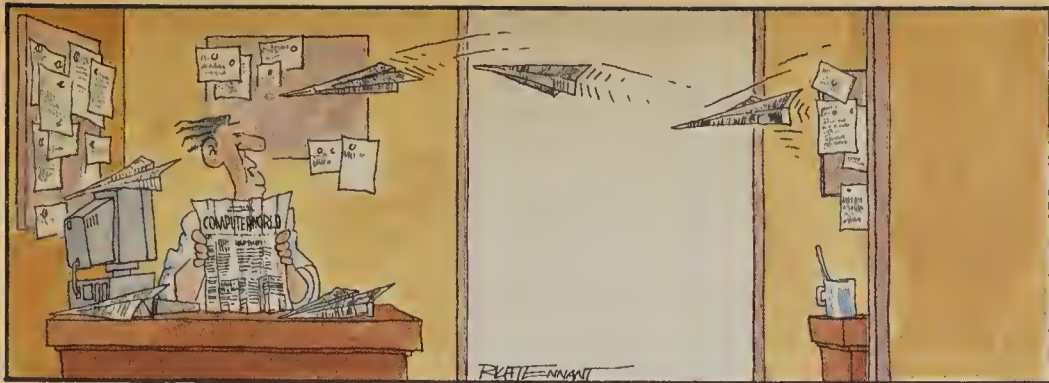
NEW DEALS

Kaypro swings largest order

In its largest order ever, **Kaypro Corp.** recently signed a two-year contract valued at \$40 million with **Palonet, Inc.**, an industrial and commercial parts distributor network service. Palonet has agreed to buy up to 40,000 KC-2 Series computers and said it chose Kaypro after evaluating products from Wyse Technologies, Inc., AST Research, Inc., Tandy Computer Corp. and Hyundai.

Separately, **Cable Value Network**, a Minneapolis-based cable television shopping channel, has awarded Kaypro a multimillion-dollar order for 8,000 MC-10 PCs.

Sun Microsystems, Inc. recently won its largest bank automation contract to date with the sale of approximately \$17.6 million worth of Scalable Processor Architecture-based systems to **Banca Popolare di Bergamo**, one of Italy's oldest banks.



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 - 23. Dir./Mgr. Sys. Development, Sys. Architecture
 - 31. Mgrs., Suprv. of Programming, Software Dev.
 - 32. Programmers, Software Developers
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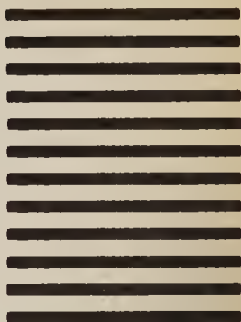
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- 11. President, Owner/Partner, General Mgr.
 - 12. Vice President, Asst. VP
 - 13. Treasurer, Controller, Financial Officer
 - 41. Engineering, Scientific, R&D, Tech. Mgt.
 - 51. Sales & Mktg. Management
- OTHER PROFESSIONALS
- 60. Sys. Integrators/VARs/Consulting Mgt.
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NEW PRODUCTS

Systems

Northgate Computer Systems, Inc. has expanded its Elegance family of computing systems with the addition of a 33-MHz, Intel Corp. 80386 model computer.

The Elegance 386/33 standard configuration offers 1M byte of 32-bit random-access memory and 64K bytes memory cache, as well as a 68M-byte, 28-msec hard disk. A 256K-byte memory cache option is available. The computer is priced from \$4,599.

Northgate Computer
P.O. Box 41000
Plymouth, Minn. 55441
612-553-0307

Unisys Corp. has announced the introduction of an 80386SX-based, Microsoft Corp. MS-DOS-compatible system.

The 500/16A includes 1M byte of random-access memory, expandable to 5M bytes on the motherboard. Two RS-232 ports, a parallel printer port and five expansion slots are listed as standard.

Three configurations are available. The basic system, without floppy or hard disk drive units, is priced at \$2,256. The expanded system unit, which includes one 3½-in. floppy drive and a 20M-byte hard disk drive, lists at \$3,547. A 40M-byte system is available for \$4,162.

Unisys
P.O. Box 500
Blue Bell, Pa. 19424
800-448-1424

Epson America, Inc. has unveiled a laptop computer with removable hard disk drives.

The Equity LT-286E reportedly comes equipped with a removable 20- or 40M-byte hard disk drive for added security or easier upgrades. Also standard is 1M byte of random-access memory and a removable, paper-white LCD display.

The announced retail price of the LT-286E is \$4,599 with a 20M-byte hard drive or \$4,999 for a 40M-byte hard drive.

Epson
23530 Hawthorne Blvd.
Torrance, Calif. 90505
213-539-9140

Hewlett-Packard Co. has announced its first personal computer based on the Intel Corp. 25-MHz i486 microprocessor and the Extended Industry Standard Architecture (EISA).

The HP Vectra 486 PC is especially suited for computer-aided design applications, the vendor said, and can also be used in a departmental multiuser or local-area network server capacity. It provides up to 64M bytes of random-access memory on a single memory board, 1.3G bytes of

mass storage and a video graphics array adapter.

It is scheduled for release in the first quarter of next year. Pricing ranges from \$13,999 to \$19,999, depending on configuration.

Hewlett-Packard
3000 Hanover St.
Palo Alto, Calif. 94304
800-752-0900

Data storage

Bay Microsystems, Inc. has introduced two removable-cartridge systems for the IBM Personal Computer, Personal System/2 and compatibles.

The 44Repack stores 44M bytes of data onto high-performance Winchester cartridge packs, the vendor said, while the 600Repack stores 600M bytes of data onto compact erasable optical cartridges. Each product is available in external and internal configurations, with pricing starting at \$1,049 for the 44Repack and \$4,095 for the 600Repack.

Bay Microsystems
Suite 108
210 Columbus Ave.
San Francisco, Calif. 94133
415-563-8392



NEC's three-pound Intersect CDR-35 CD-ROM reader

NEC Technologies, Inc. has introduced a full-function, portable compact disk/read-only memory (CD-ROM) reader.

The Intersect CDR-35 weighs three pounds and can be powered by an AC adapter or an optional battery pack. To conserve battery power, the reader automatically drops disk speed after five minutes of nonuse.

According to the manufacturer, interface kits are available for most major personal computer platforms.

The suggested retail price of the CDR-35 is \$599. An IBM PC and compatibles interface kit is available for \$199. The Apple Macintosh interface lists for \$99.

NEC
1255 Michael Drive
Wood Dale, Ill. 60191
312-860-9500

Paul Mace, the author of Mace Utilities, has announced the recent formation of Paul Mace

Data Recovery.

Potential clients can call the company and arrange to have a damaged hard disk drive or floppy disk examined.

Once a problem is diagnosed, the owner of the drive or disk will be contacted and provided with a price estimate on data recovery.

The standard charge for diagnosis of a floppy disk is \$100. A hard disk will be examined for \$200. Additional charges for recovery will vary.

Paul Mace
400 Williamson Way
Ashland, Ore. 97520
503-488-5011

A family of storage upgrades for the IBM Personal System/2 Model 30-286 has been announced by Dolphin Systems Technology.

The three zero-slot small computer systems interface hard drive subsystems range in capacity from 20M to 80M bytes, the firm said. The units do not require any of the three expansion slots in the Model 30-286, as the Dolphin drive is located in the same position used by IBM for the optional "B" floppy disk drive.

Suggested retail pricing ranges from \$549 for a 20M-byte version to \$1,349 for 80M bytes.

Dolphin Systems
Building G
1701 E. Edinger Ave.
Santa Ana, Calif. 92705
714-558-3220

Utilities

Bloc Publishing Corp. has announced the release of a print-management and spooling utility.

Printrite reportedly will intercept printed output from an application, compress it and then store it to the disk until the user is ready to print.

The program can then send the file to a printer while the user continues to run another application.

Printrite supports IBM-compatible personal computers and is available for a suggested retail price of \$99.95.

Bloc Publishing
Suite 765
800 Southwest 37th Ave.
Coral Gables, Fla. 33134
305-445-0903

The Great Softwestern Company, Inc. has announced Version 3.0 of its Autodesk Autocad display program.

Quick-See 3.0 allows users to view Autocad drawing files in both 3-D and plan-view perspective. The files can also be changed to .PIC format for import into other applications.

According to the company, Quick-See 3.0 displays drawings without the loading and regeneration time associated with Autocad.

Quick-See 3.0 is available for a list price of \$125.

The Great Softwestern Company
Suite 103
919 S. Carroll Blvd.
Denton, Texas 76201
817-383-4434



Mitsubishi's P-75U monochrome video copy processor

Peripherals

Mitsubishi Electric Sales America, Inc. has introduced a monochrome video copy processor designed to perform at a resolution of 162 dot/in. in a 6- by 8-in. format.

The P-75U will reportedly accept signals from most video sources, including red-green-blue analog and TTL, and it offers 64-level gray scale prints. Captions can be added to an image using a built-in character generator.

The P-75U costs \$2,850.
Mitsubishi
5757 Plaza Drive
P.O. Box 6007
Cypress, Calif. 90630-0007
714-220-2500

Sony Corporation of America has announced 14-in., high-resolution color monitor that is reportedly compatible with all major display standards.

The Multiscan HG can be used with Apple Computer, Inc. Macintosh IIs, IBM Personal System/2s, Personal Computer ATs and compatibles. The monitor provides 1,024- by 768-pixel resolution and automatic selection of horizontal scanning frequencies ranging from 28 to 50 KHz. It is priced at \$1,095.

Sony
9 W. 57th St.
New York, N.Y. 10019
212-418-9427

Tektronix, Inc. has expanded its family of Adobe Systems, Inc. Postscript language-compatible printers with the announcement of two color printers for IBM Personal Computers and compatibles and Apple Computer, Inc. Macintosh machines.

The Phaser CQ for IBM PCs and the Phaser-CQS for Macintoshes each offer a tabloid-size output capability of 11 by 17 in. Each ink-jet unit offers a standard 216 dot/in. resolution. The Phaser CQ costs \$7,590. The Phaser-CQS, a network offering bundled with an Appletalk print server, costs \$9,995.

Tektronix
P.O. Box 1000 M-S 63-630
Wilsonville, Ore. 97070
800-835-6100

Board-level devices

Headland Technology, Inc. has introduced a high-performance IBM Video Graphics Array (VGA) adapter that comes in 256K- and 512K-byte memory configurations.

The 256K-byte version of the Video Seven VGA 1024I reportedly enables users to select two or four on-screen colors from a palette of 262,144 at a resolution of 1,024 by 768 dot/in. interlaced, or to select 16 colors at a resolution of 800 by 600 dot/in. With the 512K-byte version, users can select 16 on-screen colors at a resolution of 1,024 by 768 dot/in. interlaced, or 256 on-screen colors at 640 by 480 dot/in., the company said.

Compatible with major graphics standards, the 256K- and 512K-byte models sell for \$397 and \$497, respectively.

Headland Technology
46221 Landing Pkwy.
Fremont, Calif. 94538
415-656-7800

Unix software

Sourcemate Information Systems, Inc. has announced the introduction of its Accountmate accounting software for Santa Cruz Operation, Inc.'s Xenix System V.

Accountmate 2.0 Plus UX allows users to operate in a multiuser, multitasking environment using terminals rather than dedicated PCs. Available modules include general ledger, accounts receivable, accounts payable, sales order and purchase order. More modules are due to be released in 1990.

Module prices range from \$295 to \$495.

Sourcemate
20 Sunnyside Ave.
Mill Valley, Calif.
94941-1928
415-381-1011

Development tools

A software tool for developing a graphical user interface within an IBM/Microsoft Corp. OS/2 Presentation Manager environment has been announced by Guidance Technologies, Inc., formerly known as Virtual Machine Corp.

Choreographer was developed to reduce interface development time by as much as 90%. It is targeted to address the needs of programmers using the OS/2 Presentation Manager and IBM CUA and Systems Application Architecture. Features include interactive graphics creation of screen elements tailored to individual user needs and connection to and from standard languages. It costs \$2,995.

Guidance Technologies
800 Vinial St.
Pittsburgh, Pa. 15212
412-231-1300

Software applications packages

A Microsoft Corp. Windows-based forms processing software package has been announced by Formworx Corp.

The FS 2 package was created for forms-intensive corporations, government agencies and midsize businesses. Features include a what-you-see-is-what-you-get display, object-oriented forms design, on-screen fill-in and 500 ready-to-use forms.

The software also offers Ashton-Tate Corp. Dbase-compatible relational database capabilities and customized printer drivers. The package runs under Windows on any IBM Personal Computer or

compatible and is priced at \$299.

Formworx
Reservoir Place
1601 Trapelo Road
Waltham, Mass. 02154
617-890-4499

Reference Software International has announced a grammar-checking program for Apple Computer, Inc. Macintosh computers.

Grammatik Mac reportedly uses artificial intelligence techniques and a rule dictionary to identify writing errors.

The program will proofread files created by Microsoft Corp.'s Word, Wordperfect Corp.'s Wordperfect and other applications. When an error is identified, Grammatik Mac offers advice and allows

the user to correct the error immediately.

Grammatik Mac has a suggested retail price of \$99.

Reference Software
Suite 123
330 Townsend
San Francisco, Calif. 94107
415-541-0222

A computer-aided design package created especially for the Microsoft Corp. Windows environment has been unveiled by Foresight Resources Corp.

Dubbed Drafix Windows CAD, the program features a modified Windows menu bar with options that change depending on the operations selected, the vendor said. Multiple interactive viewports, a library with more than 400 predrawn sym-

bols and several dimensioning functions are also provided.

The software's programming language reportedly provides a C-style control flow, and database data can be exported directly to Microsoft Excel worksheets. It is priced at \$695.

Foresight Resources
10725 Ambassador Drive
Kansas City, Mo. 64153
816-891-1040

MECA Ventures, Inc. has announced a joint venture with Legal Knowledge Systems to produce the 1989 tax year release of the Andrew Tobias' Taxcut software package.

Taxcut reportedly allows the user to prepare and print out 40 complete Internal Revenue Service-approved forms and schedules. The company also states that Taxcut contains a help facility that uses pull-down menus, dialogue boxes and artificial intelligence to assist the user.

The package costs \$79.95.

MECA
355 Riverside Ave.
Westport, Conn. 06880
203-226-2400

Warrington Financial Systems, Inc. has announced the most recent release of its asset and liability management system.

Running on IBM Personal Computers and compatible systems, Basis Version 8.0 provides integrated forecasting, modeling and asset and liability management for large financial institutions. According to the company, the latest release calculates amortization schedules based on user-defined inputs and automatically adjusts amortization amounts to reflect prepayments. A single-copy license fee ranges from \$8,000 to \$25,000, depending on user requirements, and site licensing is available.

Warrington Financial Systems
101 Main St.
Cambridge, Mass. 02142
617-499-2000

A mechanical software system that incorporates geometric tolerancing and controls, associative dimensioning and productivity enhancements has been announced by Versacad Corp.

Versacad/Mechanical was designed to improve the mechanical part design and automated manufacturing process. It runs in conjunction with the Versacad/386 and Versacad/Macintosh Edition computer-aided design packages; the two editions are priced at \$295 and \$195, respectively. Both versions support ANSI, DIN and ISO standards.

Versacad
2124 Main St.
Huntington Beach, Calif. 92648
714-960-7720

Diagsoft, Inc. has revised its Qaplus quality assurance diagnostic software package in order to provide support for the AT&T Unix platform.

Release 4.1 is a self-booting program designed to pinpoint system problems, according to the vendor. Features include on-line help, pull-down menus and mouse support facilities. The software runs on the IBM Personal Computer, Personal System/2 and compatible systems.

The package costs \$134.95.

Diagsoft
6001 Butler Lane
Scotts Valley, Calif. 95066
408-438-8247

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PC Week, February 20, 1989

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NETWORKING

DATA STREAM

Jeffrey N. Fritz

Short-term, but it works



Digital communications technologies such as Integrated Services Digital Networks (ISDN) offer IS directors exciting new potential for data connectivity.

The possibility of 64K bit/sec. clear data channels for national dial access is important to the future growth of many IS shops. As inspiring as such a future may be, the hard fact is that not every IS director has access to ISDN's capabilities. The corporation may be willing to make the investment that ISDN requires, but the local telephone operating company may not be able to offer ISDN services for some time to come. This leaves many IS directors not knowing whether to purchase needed equipment and services or hold off and wait for

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- Leo Burnett finds the right LAN. Page 44.
- Nynex discovers a Prodigy. Page 45
- Data Switch announces fault-tolerant switches. Page 47.

Northern cloudy on hybrid manager

ANALYSIS

BY ELISABETH HORWITT
CW STAFF

NASHVILLE — Northern Telecom, Inc. is taking somewhat longer than expected to provide its promised system for managing hybrid, multivendor networks that combine private equipment and carrier-based

services.

Last May, Northern announced Meridian Network Control System (NCS), which it said would provide users with integrated management across private networks of both Northern Telecom and other vendors' equipment, as well as carrier services based on Northern Telecom's Meridian line of central office switches.

However, the first release of NCS, which began shipping last October, only manages Northern Telecom DMS 250, SL-100 switches, SL-1 private branch exchange (PBX) systems and several other brands of PBX via a third-party box. Northern has promised that it will provide Open Systems Interconnect (OSI) support as a way to integrate NCS with other vendors'

management systems, as well as with its Business Network Management system, which manages its Meridian line of central office switches. However, the vendor does not plan to provide that OSI support until April 1991, when Release 3 of NCS is scheduled to ship, according to Ian Sugarbroad, vice-president of network systems at Northern Telecom.

How to split it

Westinghouse Electric Corp. will use NCS to manage its Northern Telecom installation, which includes a substantial number of giant DMS 250 switches.

However, Westinghouse has not yet decided how to divvy up integrated network management responsibility between NCS and its own, extensive homegrown management system, Westinghouse Communications Executive Vice-President David Edison said in an interview.

An important NCS attribute will be its support of "the best hooks to tie our [network management system] into: OSI hooks," Edison said.

Still unclear is how Northern will provide integrated management for companies that combine private network switches with carrier services. Westinghouse can use NCS to manage its DMS 250s, which will be located on MCI Communications Corp. premises, an MCI spokeswoman said; however, MCI has no plans to put its network services under direct user control and surveillance through Northern's network management systems, she added. Rather, MCI expects Northern NCS users to interface via OSI link with the carrier's

Continued on page 45

Fast-packets' economies find their user niche

BY JOANIE M. WEXLER
CW STAFF

The efficiency of "fast-packet" T1 multiplexers, which blend the dynamic bandwidth allocation features found on statistical multiplexers with the ability to packetize and quickly route data, voice, video and image, offers significant economies to certain cost-conscious companies. However, industry analysts caution that the devices do not necessarily outperform traditional circuit-switching multiplexers — which require users to dedicate channels to voice or data — in every application.

Stratacom, Inc., the Campbell, Calif., maker of the Integrated Packet Exchange (IPX) family of T1 Fastpacket Bandwidth Management Systems, recently inked contracts with two customers who anticipate improved cost/performance by being able to reduce the number of circuits required for integrating

voice, data, video and image.

"With circuit-switched technology, you always have a certain frame of information that needs to be collected and



Covia's Teflian looks for price/performance gains

switched electronically through time-division multiplexing," explained Mark Teflian, vice-president and chief information officer at Covia, a Stratacom

customer that signed up for 35 IPX nodes last month. "But as soon as you packetize information, you have the ability to segment and route it."

Covia, a Rosemont, Ill.-based travel-related reservation network owned by seven airlines, links 10,000 locations in North America off a T1 backbone. The company is replacing its 22 Amdahl Corp. T1 multiplexers with the IPX nodes; it has cut over 14 IPX nodes to date and anticipates that all 35 IPXs will be installed by the end of 1990.

Another new Stratacom customer, First Options of Chicago, last week contracted for three IPX nodes and anticipates savings of \$30,000 to \$40,000 per month through reduction of circuits. Deidre English, a telecommunications analyst at First Options, predicted that circuit-switching will one day be phased out in favor of fast-packet technology.

However, Steven A. Taylor, president of Distributed Networking Associates, a consulting firm in Greensboro, N.C., said that the efficiencies of fast-packet technology depend on the

Continued on page 47

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- 50-line VGA
- picture strings
- user interface
- online help
- utilities
- binary editing
- network support

```
EDIT1 0:SCORL\SOURCE\HMCALL.COB
COMMAND -> F P'ICS' .a .b
000062
000063
000064
000065
000066
000067
000068
000069
000070
000071
000072

GO TO CICS-CONTROL.
READ-INPUT.
EXEC CICS HANDLE CONDITION MAPFAIL(NOTFOUND) NOTFND(NOTFOUND)
ERROR(ERRORS) DUPREC(DUPREC) END-EXEC.
EXEC CICS RECEIVE MAP('KDFHCNB') END-EXEC.
IF EIBTRNID = 'UPDT' THEN
  EXEC CICS READ UPDATE DATASET('FILEA') INTO(FILEA)
  EXEC CICS READ UPDATE DATASET('FILEB') INTO(FILEB)
  IF FILEREC IN FILEA NOT = FILEREC IN FILEB THEN
    MOVE 'FILE ALREADY UPDATED - REENTER' TO MSG10

EDIT2 0:SCORL\SOURCE=COB
COMMAND ->
000062
000063
000064
000065
000066
000067
000068
000069
000070
000071
000072

NAME EXT SIZE DATE TIME
ADDENTRY COB 7680 01/12/87 12:42p
ADDMENU COB 2560 03/26/86 8:02a
ASKOMGR COB 1536 03/29/86 10:33a
ASKTOP COB 1536 11/25/85 11:07p
CHGSEL COB 6144 01/12/87 12:48p
CKDATE COB 1024 01/07/86 8:11p
DBPACK COB 2048 10/30/85 9:47p

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AT&T

Network Systems

Burnett touts advertising's star LAN

ON SITE

BY ELLIS BOOKER
CW STAFF

CHICAGO — A star among advertising agencies, Leo Burnett U.S.A. also boasts one of the most sophisticated local-area networks in the country.

In October, this U.S. arm of the Leo Burnett Co., which expects to bill \$3.2 billion this year, won the single-site user Excellence Award from the Enterprise Networking Institute for its Star Reachers Network, a 1,200-node Novell, Inc.-

based LAN.

But success in office automation did not come easily. An earlier attempt failed.

"They tried to put in an office automation system that basically was an electronic mail-based system," said Tim F. Thompson, Leo Burnett's vice-president of management information systems. The company experimented with linking departmental secretaries over an E-mail network using a handful of personal computers.

That network augmented 150 to 200 IBM 3270 terminals used by administrative staff and linked to an IBM 4381 main-

frame at Leo Burnett's old headquarters.

From his new office overlooking the Chicago River, Thompson, who came to Leo Burnett from Arthur Young Co., said that the 1985 E-mail network failed to offer the functionality users needed. "It became obvious that we needed to put the power of a computer on the desks of our professionals," he said.

Leo Burnett moved to the new headquarters over Memorial Day, a four-day whirlwind of activity that involved connecting 1,200 PCs, turning on a Rolm 9751 digital phone switch, migrating to an IBM 3090 Model 150E mainframe and

connecting 37 Novell 386 AE file servers to a Synoptics Communications, Inc. 100M bit/sec. fiber-optic backbone that runs throughout the building and may eventually connect to many of the PCs.

Installing the cabling on 29 floors involved testing 10 terminations at each of the 100 or so workstations per floor. Those cables include shielded Token-Ring cable and voice cable, as well as the orange-sheathed fiber cable.

When Leo Burnett decided to construct a building, it elected to wire every office with fiber-optic cable. The toughest part of that job was the task of getting management to agree, Thompson said.

"Typically in technology, especially this type of technology, if you're trying to do it on a cost-savings basis, you're not going to do it," he said.

Instead, Thompson sold management on the fact that the move "offered a unique opportunity" and that the 100M bit/sec. fiber would be essential for the multimedia workstations the company will need some day as well as making it easier to relocate departments.

Before its time

While Leo Burnett was honored for its progressive network, its work on cooperative processing is also notable. Thompson claimed that Leo Burnett is one of the few advertising agencies with its own mainframe for media buying. Most of the other agencies, he said, use time-sharing systems.

"We have our mainframe in-house and are making that a true, cooperative processing platform. Other agencies can't do that," he said, citing advantages of speed, cost and functionality. "We have a mainframe repository available to many users."

Through the four Novell TIC gateways, some 400 PC users can have concurrent mainframe sessions, as can the 332 users of 3270 terminals.

Regarding OS/2, Leo Burnett's PC development group is "getting their feet wet and are making plans for the future," said Paul Jacob, director of development.

"We see rolling OS/2 out on a case-by-case basis," Jacob said, noting that OS/2 "is a very expensive platform to roll out en masse to 1,200 PCs."

One cooperative processing application now under development involves Leo Burnett's media-buying system, a suite of automated systems that supports the process of buying advertising and automates the task of placing media orders for newspapers, magazines, radio and television buys.

"Some of the data will reside on the LAN, some of the data will reside on the mainframe. A lot of the decision making is going to be made much more quickly and much more friendly on the PC and the LAN. Some of the processing will occur on the mainframe," Jacob said.

The goal, he said, is to create better front-end and back-end tools to consolidate the results from disparate mainframe systems.

What's more, cooperative processing should allow users to "bring information down to their individual machine and use some of the tools they feel comfortable with," Thompson concluded. "This is why we spent a million and a half up front on this network. We were making a major transition from a back-office, glass-house data processing shop to a strategically positioned IS shop. We have been an agent of change here."

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Nynex, Prodigy ink 'If you scratch my back, I'll scratch yours' deal

BY ALAN J. RYAN
CW STAFF

NEW YORK — Nynex Corp. has become the first of the regional phone companies to strike up an agreement with Prodigy Services Co., agreeing to support the delivery of Prodigy to homes throughout its territory.

Analysts said the deal could bring increased telephone network traffic to Nynex while allowing Prodigy to cut costs associated with its original plan of building

earn from its alliance with Prodigy would essentially be funneled back to the rate payers: "They need a change in regulations in order for this to be beneficial." Right now, she said, Nynex does not even earn its allowed rate of return in New York.

Theodore C. Papes Jr., president and chief executive officer of Prodigy Services Co., said the agreement means that the Prodigy service will be able to reach many cities sooner than might have been the case otherwise.

Regional storage of frequently requested information at the local sites will help to keep Prodigy cost-efficient, according to Nynex.

From the standpoint of Sears and IBM, the move is a good one, said Casey Dworkin, general manager at Personal Technology Research in Waltham, Mass. Both, he said, "are under pressure in terms of their base businesses; both have spent millions in developing this videotex service." For Nynex, Dworkin added, it is an opportunity to get into the information services industry without violating government-imposed antitrust laws.

In five or 10 years, the alliance may pay off for Nynex, Dworkin added. The company has set the stage strategically for more alliances by working with Prodi-

gy. "Any regional holding company should be looking at gateway services," Dworkin said.

However, not every phone company is interested. Ameritech, based in Chicago, declined participation with Prodigy. Dworkin said it is likely that other regional operating companies will form alliances with Prodigy but that some may still be skeptical.

"If you think Prodigy has an appeal to the customers you can reach, it is a good service to offer a gateway to. But you have to look at the investment you have to make in serving that base," Dworkin said.

Although Prodigy has shown some promising results in regional usage, he said, it still has yet to be proven on a national scale.

FOR NYNEX IT is an opportunity to get into the information services industry without violating government-imposed antitrust laws.

and maintaining its own computer networks. Prodigy, a joint venture of IBM and Sears, Roebuck & Co., is an interactive personal service that allows users with personal computers to receive news, weather and financial and sports information.

In addition, users can also send mail, shop, make travel arrangements and buy and sell stocks through the service, which costs \$9.95 per month plus a start-up fee.

Nynex's Computer Services division will construct and own Prodigy local computer sites in selected Northeastern markets. It will then install and operate mini-computers at each local site and will provide network design consultation and network management to support Prodigy users.

With the way Nynex is regulated in the state of New York, said Joanne C. Smith, an analyst at Nomura Research Institute in New York, any profits Nynex could

Northern

CONTINUED FROM PAGE 41

own Integrated Network Management System.

Release 2 of NCS, which is scheduled for shipment next June or July, will add a third-party performance management system, Sugarbroad said. The system will also allow users to plot network trends and data on charts, a feature not included in the first release, Sugarbroad said.

Release 3 will support OSI/Network Management Forum specifications as a means to interface with other OSI-compatible systems, such as AT&T's Accumaster Integrator, Digital Equipment Corp.'s Enterprise Management Architecture and the management systems of local exchange carriers, Sugarbroad said. Release 3 will also provide "automatic full correlation" of alarms across various pieces of the network, he added.

Northern Telecom also plans to provide a direct connection to IBM's Netview but has not yet decided whether to base it on IBM's LU6.2 protocol or on the OSI Common Management Interface Protocol, Sugarbroad said.



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Fritz

FROM PAGE 41

ISDN services to appear.

During the transition, there is hope for IS managers who need ISDN-like service. A voice-over-data technology called Central Office Local Area Network (COLAN) provides many futuristic ISDN features

with today's technology.

Like ISDN, COLAN provides simultaneous voice service and data connectivity for both synchronous and asynchronous applications. COLAN's data rate is limited to 19.2K bit/sec. and provides only a single data channel, but for many applications that is adequate.

COLAN does not use digital technology. Data is converted to

an analog signal and frequency multiplexed over the voice signal. On the receiving end, the data is demultiplexed out. Thus, both voice and data services exist over a single telephone line. Since there is no special wiring required, COLAN can be accommodated over standard telephone twisted-pair wiring.

From the customer's point of view, the device that makes

COLAN happen is called a voice data multiplexer (VDM). The VDM is about the size of an external modem and plugs into the COLAN line coming from the central office. The VDM generally has a single V.24 (RS-232C) DB-25 serial connector and an RJ-11 jack. The data terminal equipment (DTE) plugs into the DB-25 connector and a standard analog voice telephone

can plug into the RJ-11 jack. When a circuit needs to be changed, all VDMs (both ends and any units at the central office) must be changed. Thus, circuit configurations changes for new and existing lines require coordination with the telephone company and may take a few days to accomplish.

COLAN circuits can be dial accessed through a central data switch usually located at the telephone company's central office. It is also possible to "nail up" COLAN connections by connecting VDMs back to back. With dial access circuits, the data user sees a prompt from the central office data switch asking which service is desired. The user selects the destination and is quickly connected. Under COLAN, the voice telephone acts exactly as it does on a standard telephone jack. In fact, for the voice user, COLAN is completely transparent.

At first glance, it may appear that COLAN has little value in a concentrated computer environment. After all, extensive voice service isn't of great value in most machine rooms. However, some shops have made good use of the voice service provided by COLAN. While the VDM's data port is dedicated to synchronous connectivity to the mainframe, creative IS managers have used the voice port for modem dial-in access for their asynchronous users. In a sense, that provides two data ports without the need for an added telephone line.

Typical uses for COLAN include connectivity to remote cluster controllers. Remote controllers can usually be located up to a few miles from the host site. Another application for COLAN is for PC-to-PC dial-up access. The central office LAN becomes just that — a hub for interconnecting PCs on an impromptu basis. While COLAN doesn't offer all the features of Token-Ring or Ethernet, it can provide good transfer rates and longer distance PC-to-PC connection. Actually, COLAN should have been labeled "COMAN," because it provides metropolitan-area network access for users.

COLAN technology is stable and fairly easy to maintain. There is also the added luxury of having the telephone company, not the end user, responsible for maintaining the network. While it cannot provide the comprehensive voice and data services of ISDN, COLAN does offer important connectivity features — and generally at a lower cost than ISDN or dedicated digital access lines. More importantly, it is available now for users who cannot afford to wait for the future arrival of ISDN.

Fritz is a data communications analyst at West Virginia University in Morgantown, W. Va.

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Data Switch targets time-critical applications

BY JOANIE M. WEXLER
CW STAFF

SHELTON, Conn. — Businesses demanding near-100% mainframe availability and large-scale switching capabilities are the target customers of two channel-based computer/peripheral switches announced recently by Data Switch Corp.

The company cited such time-critical applications as airline reservation systems, automated teller machine networks and brokerage systems as suitable for the fledgling Model 2400, which the company said is the first "fault-tolerant" switch for IBM and compatible computer channels.

Data centers with multiple CPUs, large peripheral configurations and mainframe CPU partitioning features are candidates for the larger Model 1800, which supports up to 48 channels and 96 control

unit ports, compared with the 2400's support of 24 CPU channels and 96 control unit ports. The 1800, however, does not include the redundant logic of the 2400.

Dual-matrix redundancy within the 2400 sends two sets of signals to their destinations via two different I/O paths to protect against the possible failure of one path. In addition, in the event of a CPU or control unit failure, the switch will rotate the failed device off-line and bring a backup unit on-line.

CPU partitioning features, such as IBM's Processor Resource/Systems Manager (PR/SM) or Amdahl Corp.'s Multiple Domain Facility, "break up" the

mainframe CPUs into multiple processors. Each processor requires a separate data connection, contributing to the need for the added switching capacity provided by the 1800.

One industry analyst, however, said the need for channel switches in general may be shrinking because of the redundancy now being built into front-end processors.

"Many people use a channel switch primarily to guard against a failure of a front end," noted David Passmore, a partner in the network strategies consulting practice at Ernst & Young in Fairfax, Va. "But now many front ends, such as the

IBM 3745, are being designed with dual processors that can back each other up."

Passmore added that although channel switches are still options for mainframe backup, the routing functions in host-resident Virtual Telecommunications Access Method (VTAM) and Network Control Program (NCP) in front-end processors could alternatively be used to reroute traffic to a backup mainframe. Users, he explained, could channel-attach all devices to one another separately, and VTAM and NCP could logically reroute traffic in the case of a channel failure.

Passmore acknowledged, however, that there is a cost trade-off in using this method, because users would need fewer channel connections if they used a channel switch.

Fast-packet

CONTINUED FROM PAGE 41

nature of the traffic.

"If you have bursty traffic, fast-packet is more efficient," he explained. "If you have continuous traffic, fast-packet is actually less efficient, because it takes more overhead to allocate the bandwidth dynamically than to dedicate the channels."

Tim Zerbic, principal and vice-president of technology at Vertical Systems Group, Inc., a telecommunications consulting firm in Boston, concurred. "Fast-packet has an advantage for regular voice or nondeterministic data traffic," he said, adding that if users are transmitting facsimile or modem traffic over a voice circuit or are running videoconferencing, fast-packet efficiencies are lost.

"This is because users must dedicate the bandwidth for those calls as they would in any other network," he explained.

Covia a good candidate

A reservation system such as Covia's is probably a good candidate for fast-packet technology, "because those sessions tend to be very short and bursty," Taylor said. "The travel or airline agents key in commands, get back a screen full of data and sit there and look at it for three minutes."

First Options, according to John T. Byrne, vice-president of communications, is using the IPX nodes to supplant a significant number of automatic ring-down private-line circuits. He described his company as voice-intensive and said that fast-packet "lets us adjust bandwidth to our best advantage. That, combined with 4-to-1 voice compression, gives it a clear cost advantage over the circuit technologies we looked at."

The three distinguishing characteristics of fast-packet technology are smaller packet sizes that allow more consistent delays, rapid routing stemming from features such as simplified addressing and elimination of error recovery functions at the data-link level, according to Thomas Nolle, president of Haddonfield, N.J., research firm CIMI Corp.

He said that regional carriers should start using an AT&T fast-packet switch next year and that Telenet Communications Corp. is currently working with Stratacom on a fast-packet service offering.

Use the Brains IBM Gave You!

When the PC was new, big programs rarely used even 64K. So IBM® seemed quite generous when it gave us 640K of user memory.

That was eight years ago. Today, users are struggling to accommodate network and mouse drivers, TSRs and buffers within that same 640K along with the new generation of more powerful programs. It's known as 'RAM cram.'

If this is a problem you're facing (or expect to face) we have good news for you.

Introducing Manifest™—the Quarterdeck memory analyzer

Even expert PC users may be unaware how much of the capacity in most PCs is wasted.

That's why Quarterdeck Office Systems, publishers of DESQview,™ developed Manifest, a new, inexpensive tool to assess memory use. It's

the result of years of in-depth study of the memory map of the PC. It does for memory what PC Tools does for disks. All for under \$60.

Manifest gives you a guided tour 'under the hood' of your PC, to show what's going on, what type and amount of memory is available, and even which portions of RAM are faster.

Then it suggests how you might load networks, buffers, mouse drivers, TSRs and other utilities into unused memory.

It finds and displays all the contents of your AUTOEXEC.BAT and CONFIG.SYS FILES, which can be a big help in diagnosing problems.

Manifest even tests memory board speed so

System Requirements
Manifest: 8088, 8086, 80286 80386 and i486 PCs & PS/2s
QRAM: 8088, 8086, 80286 PCs. Use of high memory is only available when PC has EMS 4 or EEMS expanded memory or Chips & Technologies shadow RAM.
QEMM 50/60: 80286-based PS/2s and compatibles with IBM PS/2 80286 Memory Expansion Option, IBM PS/2 80286 Expanded Memory Adapter/A or compatible.
QEMM-386: 80386-based PCs and PS/2s and PCs with 80386 add-in boards.

Trademarks: IBM, PS/2: IBM Corporation; PC Tools: Central Point Software; 80386, i486: Intel Corporation; Chips and Technologies: Chips and Technologies



Your memory is full of holes. We can fill them. And give your programs more room to run smoothly.

you can make informed buying decisions.

Best of all, you don't need a PhD to understand what you're doing. Manifest's interactive operation tells you how to use the program and what benefits you can expect.

Introducing QRAM™—the Quarterdeck memory optimizer

If you have an EMS 4.0 or EEMS board, QRAM (pronounced cram) can use it to free up more memory within the 0K to 640K area. Gain the additional 30-130K you need for those big programs and files. It looks at your AUTOEXEC.BAT and CONFIG.SYS files and figures out which TSRs, network and mouse drivers and DOS resources can be moved out of program memory.

And if you have an EGA or VGA-equipped PC and don't need graphics at the moment, QRAM will make an additional 96K of memory available! When you need graphics again, QRAM will switch you back to graphics mode!

Think how helpful that will be for those big dBASE files.

QRAM can't work miracles, but if there's memory available anywhere, QRAM lets you use it to boost your PC's performance.

QRAM is available bundled with Manifest for just a few dollars more than Manifest alone.

Manifest and QRAM—two more examples of Quarterdeck's commitment to giving you the most productivity out of the PC and software you own today.

Introducing two new Quarterdeck Expanded Memory Managers™

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QEMM is the all-in-one memory manager for breaking the 640K barrier.

QEMM 50/60 is for the PS/2™ series 50 and 60. It works with all IBM-compatible memory boards, and comes with a long list of adapter data to help you use your MCA hardware better.

QEMM-386 is for all 386-based computers, including older PCs with 80386 upgrade boards. It allows you to expand your RAM capacity—all the way to 32 megabytes, if you like.

Both give you expanded memory compatible with EMS 4.0 and EEMS. Both are also extended memory managers, compatible with XMS.

And both give you maximum control over your memory in the 640K-1024K area, guiding you through decisions on where to move TSRs and network drivers for maximum performance.

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	QRAM and Manifest 1.0			\$79.95	
	QEMM 50/60 v5.0 (with Manifest)*			\$99.95	
	QEMM 386 v5.0 (with Manifest)*			\$99.95	
Shipping/Handling \$5 in USA, \$10 elsewhere California Residents add 6.5%					
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NEW PRODUCTS

Local-area networking software

Digital Products, Inc. has released Version 2 of its Netcom-mander sub-local-area network product.

The latest version enables a shared printer to send a graphics file at approximately 12,000 char./sec., the firm said. The product connects as many as 32 personal computers within a departmental work group. Its functions include printer management, peripheral sharing and file sharing and transfer.

Version 2 is offered in 10-, 16- and 32-port configurations, with prices ranging from \$1,895 to \$9,895.

Digital Products
108 Water St.
Watertown, Mass. 02172
617-924-1680

A printer-sharing package that allows users to share laser printers, plotters or other devices at distances up to 1,000 feet has been introduced by Integrated Marketing Corp.

The Data Manager DM-60 model permits as many as five computers to simultaneously share a serial or parallel printer over RJ-12 telephone wiring. An internal 256K-byte spooler/buffer, expandable to one megabyte, is included. The product is priced under \$500.

Integrated Marketing
1031-H Duane Ave.
Sunnyvale, Calif. 94086
800-537-5999

IMRS has announced a local-area network-based software program designed to function as an information system for executives.

Called IMRS Ontrack, the product works with IMRS' Micro Control management and reporting system to allow high-level corporate users to monitor financial and structural reporting changes. The software utilizes the Microsoft Corp. Windows user interface and costs \$35,000 for up to five computers at a single headquarters site. IMRS Ontrack runs on Intel Corp. 80286- and 80386-based machines equipped with IBM's Enhanced Graphics Adapter or Video Graphics Array displays.

IMRS
1600 Summer St.
Stamford, Conn. 06905
203-323-6500

Information management software for local-area networks is now available from Advanced Concepts, Inc.

Dubbed Office Minder, the product reportedly features electronic mail, telephone messaging, scheduling, project management, resource manage-

ment, electronic Rolodex and reminder alarm functions. Full-featured text editing and ASCII import and export capabilities are also offered. The product costs \$595 per server for an unlimited number of users.

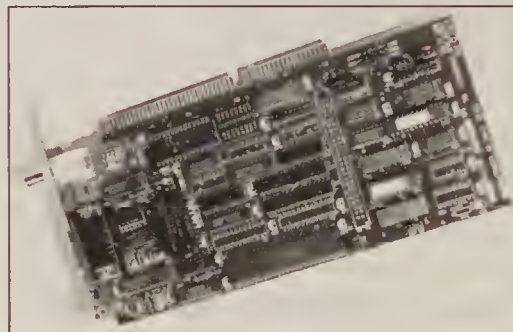
Advanced Concepts
4129 N. Port Washington Ave.
Milwaukee, Wis. 53212
414-963-0999

Local-area networking hardware

Hayes Microcomputer Products, Inc. has announced two hardware products: one designated for Micro Channel Architecture (MCA) technology, the other for the Personal Computer XT/AT or Extended Industry Standard Architecture (EISA) bus computers.

Both were developed to provide a cost-effective coprocessor function for the personal computer system, the company said, and both support dual serial ports, each operating from 300 bit/sec. to 38.4K-bit/sec. Scheduled for shipment in second-quarter 1990, the Hayes ESP for MCA and the Hayes ESP for IBM PC XT/AT and EISA will have estimated retail prices of \$349 and \$299, respectively.

Hayes
705 Westech Drive
Norcross, Ga. 30092
404-441-1617



Cogent's Ethernet server cards are IEEE 802.3-compatible

Cogent Data Technologies, Inc. has announced a family of 32-bit bus-mastering Ethernet server cards.

The E/Master 32 series is based on the Intel Corp. 32-bit local-area network coprocessor chip, the vendor said. The product is IEEE 802.3-compatible and was designed for the Industry Standard Architecture, Extended Industry Standard Architecture and Micro Channel Architecture buses. Drivers are available for DOS, OS/2 LAN Manager 2.0 and Novell, Inc.'s Advanced Network.

Deliveries are scheduled to begin in the first quarter of 1990, with list pricing at \$895 for the E/Master 32L.

Cogent Data Technologies
P.O. Box 926
Friday Harbor, Wash.
98250
206-378-2929

CBIS, Inc. has unveiled Network-EZ, a combination hardware and software system designed to create a network targeted specifically for entry-level system users.

Scheduled for delivery this month, the product supports as many as six users and is said to be IBM Netbios-compatible. It provides disk- and printer-sharing capabilities between workstations and does not require a dedicated server, according to the vendor. Two versions are available: The I/O version, developed to network portable computers, costs \$420; a faster, more powerful version is priced at \$600.

CBIS
Suite 170, Building 100
5875 Peachtree Industrial Blvd.
Norcross, Ga. 30092
404-446-1332

Rad Data Communications Ltd. has announced the TRE, or Token-Ring Extender, designed to connect a single remote workstation to a Token-Ring local-area network.

The extender operates in pairs and utilizes an extender-to-extender serial communications link capable of transmitting data at rates up to 128K bit/sec., the vendor said.

It is available as a 19.2K bit/sec. model with an RS-232 interface for \$1,100 and in a V.35 interface version for \$1,300.

Rad Data
151 W. Passaic St.
Rochelle Park, N.J. 07662
201-587-8822

Data Technology, a division of Qume Corp., has added an IBM Personal Computer AT-compatible small computer systems interface (SCSI) host adapter to its existing product line.

The DTC3280 can support as many as seven SCSI devices and four AT, ANSI, IBM Personal System/2 or dual-speed floppy disk drives with 360K-, 720K-, 1.2M- or 1.44M-byte media, the company said.

The board supports both 3½- and 5¼-in. floppy disk drives and sells for \$220.

Data Technology
500 Yosemite Drive
Milpitas, Calif. 95035
408-262-7700

Links

JYACC, Inc. has introduced Jterm, a terminal emulation product aimed at transaction- and form-based applications in the AT&T Unix System V environment.

The product incorporates a file-transfer utility that offers ASCII, Xmodem, Kermit and Kermit Server protocols, the

company said. Features include direct and modem dialing, file transfer with error checking and initialization of script files. A proprietary protocol, called Jtran, is also included. The package comes with Digital Equipment Corp. VT100, VT220 and TTY emulation nodes and is priced at \$175 per single copy. Quantity discounts are available.

JYACC
116 John St.
New York, N.Y. 10038
212-267-7722

Network Software Associates, Inc. has announced an enhanced version of its AdaptSNA 3270 emulation software package.

The product runs on IBM Personal Computers, Personal System/2s and compatibles, the vendor said, and was designed to allow PCs to communicate with an IBM Systems Network Architecture mainframe. New features include four-color printing and full-screen display for IBM 3289/9 Model 3, 4 and 5 terminal emulation. Scheduled for delivery in March 1990, the software costs \$245.

NSA
39 Argonaut
Laguna Hills, Calif. 92656
714-768-4013

An integrated computer facsimile and voice-response system has been announced by Brooktrout Technology, Inc.

The Flashfax reportedly retrieves and transmits stored documents via facsimile in response to user requests entered via a Touch-Tone phone. It can store as many as 500 pages of text, graphics and images in any combination and is priced at \$5,995. The product is shipped with an Intel Corp. 80286 microprocessor, proprietary voice and facsimile cards, a 1,200 bit/sec. modem and a 20M-byte hard disk. Application software is included.

Brooktrout Technology
110 Cedar St.
Wellesley Hills, Mass.
02181
617-235-3026

Host-to-host

A software product that enables users of Wang Laboratories, Inc. VS superminicomputers to access data and applications stored on Unisys Corp. mainframes has been announced by Wang.

Called VS-Unisys (Burlington) Services Release 1.0, the software was jointly developed with Intercomputer Communications Corp., and it reportedly offers four components: terminal emulation, remote printer emulation, file transfer and Application Program Interface capabilities. Pricing ranges from \$2,000 to \$16,000, depending on configuration.

Network management

General Datacomm, Inc. has added three products to its Network Management series of software-controlled diagnostic data sets.

The NMS 19202A, the NMS 500C/UXR and NMS 500D/UXR interface with the company's Netcon Network Management System to provide diagnostic testing, monitoring, restoral and report generation functions in critical analog and digital networks. The NMS 19202A 19.2K bit/sec. analog modem is priced at \$6,695. The NMS 500C/UXR and NMS 500D/UXR are Extended Range DSU/CSU combinations designed for digital service networks, the company said, and are priced at \$1,250 and \$1,695, respectively.

General Datacomm
1579 Straits Turnpike
Middlebury, Conn. 06762
203-574-1118

Electronic mail

An electronic mail gateway product designed to connect the Digital Equipment Corp. Mailbus E-mail system to the Novell, Inc. Netware Message Handling Service (MHS) has been announced by Joiner Associates, Inc.

Jmail-MHS is a DEC VAX-resident, software-only product that permits personal computer or Apple Computer, Inc. Macintosh users to transfer E-mail to the DEC environment. The product licenses at \$9,800 per system, and software support with maintenance updates is available for \$1,500. Deliveries are scheduled for January.

Joiner Associates
P.O. Box 5445
Madison, Wis. 53705
608-238-8637

Gateways, bridges, routers

Netcon, Inc. has announced an Ethernet-to-Fiber Distributed Data Interface (FDDI) backbone transparent learning bridge that implements the proposed IEEE 802.1D Mac bridge standard.

Designated the EFBB-1, the product is also offered with a spanning tree algorithm option. Pricing begins at \$22,000.

The company has also announced its Multibus II family of products, including an FDDI controller, an Ethernet controller, backplane, central services module and development system. The controller is priced from \$14,000, and quantity discounts are available.

Netcon
Suite 170
12919 S.W. Freeway
Stafford, Texas 77477
713-240-5929

EXECUTIVE TRACK



William J. Vareschi has been appointed vice-president of General Electric Co.'s Aircraft Engine Finance and Information Systems Operation in Cincinnati.

Vareschi, 47, was formerly manager of the finance operation for GE Lighting in Cleveland. In his new position, he reports to Brian Rowe, senior vice-president for GE Aircraft Engines in Evendale, Ohio.

Vareschi is a 24-year GE veteran, joining the company after graduation from Brown University in 1965. Among his positions was a three-year stint as director of finance and IS at GE Plastics in Bergen op Zoom, the Netherlands, where he led the implementation of a central database for users in Europe, the U.S. and Japan.



Conrad H. Blickenstorfer was named chief information officer at the

Dormitory Authority of the State of New York in Delmar, N.Y. His responsibilities include data processing, telecommunications, records management and the development of consulting services to New York's city and state higher education systems.

Blickenstorfer joined the authority as MIS specialist in 1984 and became assistant director in 1985 and director in 1987. He was previously president of Matrix Masters, Inc., a microcomputer and management systems consulting firm in Albany, N.Y.

Who's on the go?

Changing jobs? Promoting an assistant? Your peers want to know who is coming and going, and *Computerworld* wants to help by mentioning any IS job changes in Executive Track. When you have news about staff changes, be sure to drop a note and photo or have your public relations department write to Clinton Wilder, Senior Editor, Management, *Computerworld*, Box 9171, 375 Cochituate Road, Framingham, Mass. 01701-9171.

Expanding IS minds with education

Some swear by on-the-job training, but getting off the job has its learning rewards

BY ALICE BREDIN
SPECIAL TO CW

Despite academics' best efforts to bring a real-world orientation to education programs for information systems executives, some experts contend that the best education comes on the job.

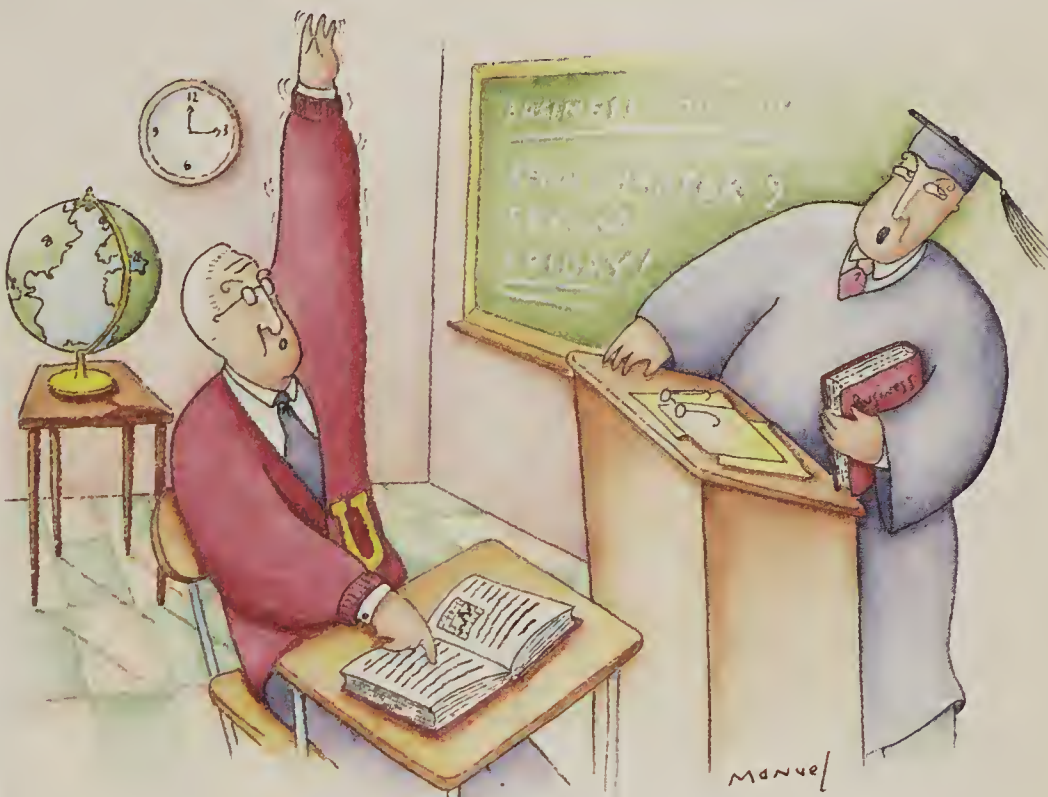
Managers, consultants and headhunters say IS executives need to learn about the business they are in and gain the respect of other managers, and that the best way to do so is to spend time with the people in their company.

However, continuing education programs for executives can have a real benefit in facilitating that on-the-job learning process. "Courses should be a catalyst for learning. We want to provide mind-expanding programs rather than training," says Walter Popper, a vice-president at Index Group, Inc., a Cambridge, Mass., consulting firm whose Index Institute conducts one-week sessions on topics in business and technology management.

If people just learn within their own company, they only learn what people in the company know, says Alan White, associate dean of executive education at MIT. Educators at business schools, professional associations and consulting firms say they are aiming to broaden perspectives rather than teach specifics — to pique a participant's interest or provide him with a new outlook to apply to his company's activities.

Skip Tolette, a partner at the New York executive recruiting firm Schmitt Bishop Tolette, is a proponent of learning on the job but acknowledges limits to the approach. "The problem is that you can get buried in the mediocrity of your own company," Tolette says.

Among the innovative steps educa-



MANUEL KING

tors are taking both to broaden their programs and make them more realistic are the following:

- Offering recurring business school programs for a single company's employees or, in a few cases, its customers.
- Exposing participants to colleagues from other nations and incorporating foreign travel into programs.
- Bringing together IS executives and general managers so they can better understand one another's concerns.
- Departing from traditional lectures by fostering interaction among participants, sometimes through role playing.

Each year, the University of Pennsylvania's Wharton School runs several programs for a single company's executives, including one overseas client. The programs typically cover general

management, perhaps with a module on information technology.

Occasionally, companies also hire Wharton to run programs for their customers. AT&T's Data Systems Group just arranged for the school to run 10 sessions on strategic information management over the next three years for the IS executives to whom the group sells.

"It's not cheap" to arrange a single-company program, says Robert Mittelstaedt, director of Wharton's Strategic Information Management Program, so the bulk of advanced management programs are the more conventional open-enrollment type, which account for perhaps 80% of the total. At Wharton, open-enrollment courses include the five-week

Continued on page 52

Golden State shines light on PC literacy

BY J. A. SAVAGE
CW STAFF

California. The land of sun, palm trees and a personal computer in every garage, or at least in every den. But California is in the bottom half of the 50 states where computer literacy is concerned.

Some progress, however, may be on the way. On Jan. 1, the Educational Technology Act of 1989 is slated to take effect, providing \$13.7 million to help high-technology education in the state. Currently, there are about 25 students for each computer available in the state's 7,000 public schools.

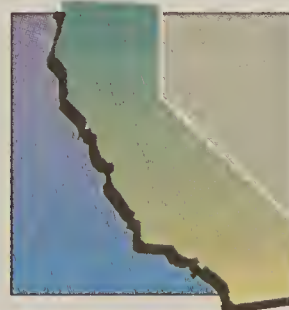
The state's image, like the technological promise of Silicon Valley, is glossy, but California schoolchildren

cannot respond to a DOS prompt any better than those in states more aligned with soybean farms than silicon, according to statistics provided by Pacific Bell.

Now, for the price of one large mainframe, educators are hoping to provide the state's 4.6 million students with some exposure to computers. This is the state's second round of funding. The effort has been promoted by the California Business Roundtable in the interest of a more educated work force and a group of businesses, including computer vendors such as Tandy Corp., that could benefit from school purchases.

A spokesman for Pacific Bell estimated that businesses spent \$38 billion last year alone providing basic educational training for employees. "We would like to be able to hire people who have the skills already," he said.

Even with the state program, computers will not simply find their way into the classroom, however. Schools must take the initiative and apply for the money to buy hardware and software. "When you talk about 7,000 schools, it takes an awful lot of equipment," said Ira Barkman, program consultant for the state Department of Education's Office of Educational Technology.





You wouldn't outfit a powerful car with wagon wheels. Why saddle your fractional T-1 facilities with anything but an AT&T Paradyne multiplexer? AT&T Paradyne has the equipment that can get you maximum performance from your fractional T-1 network.

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you can't make the most of fractional T-1 either.



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AT&T Paradyne

Expanding

FROM PAGE 49

Advanced Management Program and a one-week offering called The Effective Executive. There are also one-week programs on more narrow topics such as Implementing Strategy and Managing Organizational Change.

Program participant Carl Grivner, general manager for residence/carrier services at Illinois Bell, favored the way that the Advanced Management Program stressed the future rather than case histories.

The program weighed the impact of unification and political changes in Europe on communications and information systems and conveyed business principles such as the importance of getting market information to a company's decision-makers, he says.

MIT's Sloan School of Management, another business school that emphasizes executive education, organizes customized seminars for companies as well as for other clients — a group of chief executives of French companies, for example.

Among MIT's open enrollment programs are the 12-month Sloan Fellows, the nine-week Program for Senior Executives and a number of one- and two-week summer sessions. The latter group includes courses on decision support and microcomputer simulation as well as such business functions as finance and marketing.

The global business environment is one theme stressed in MIT's Program for Senior Executives and not just through its content: Half the students are drawn from outside North America.

"That pushes our students and faculty to consider things with a global perspective," says Charles Grader, director of the program, which covers such diverse topics as economics, strategy, marketing and human resources.

Specific topics of discussion include changes in the work force as women and minorities assume a larger role within it and the impact of technology in flattening organizational structures. The program includes a visit to Washington, D.C., for talks with government officials and also featured a trip to Brussels during this past fall.

Kathie A. Sutter, director of customer services systems at Pacific Bell in San Ramon, Calif.,

says MIT's Programs for Senior Executives can fill in gaps in one's exposure to business. "Not everyone gets the opportunity to work in marketing, manufacturing or R&D — the customer contact parts of the business," she says. That is particularly valuable for IS managers, who do not often get close to the customer.

Educational programs run by business and professional associations also stress the corporate environment.

One area in which IS executives will be expected to strongly apply business savvy is in marketing their tech-

nology, whether to people within their company or outside it, according to George Newman, senior research associate for the Conference Board's Management Information Program.

"IS executives need to know how to commercialize products to keep people from going outside," Newman says. "They need to know how to explain charges and how to spend time with users."

The need for IS executives to interact with managers of user departments is a major concern in itself, and some educational programs bring members of the two groups together. For example, at the Partnership Conference put on by the Life Office Management Association (LOMA), an Atlanta-based insurance industry group, general business executives from various industries tell IS managers how to communicate their needs to non-technical managers.

Programs that bring together IS and general business managers also aim to expand the users' awareness of what technology can do for them.

The idea is that the insight will make the users more receptive to proposals from IS managers and enhance their ability to communicate their technological needs.

Elsewhere, consultants and professional associations are encouraging IS executives to learn from one another's experiences rather than from a lecturer. "A person who had a false start implementing a technology can explain what they did. This way they don't have to reinvent the wheel," says Ann Purr, LOMA's manager of information systems

and processing.

Taking the interactive approach further, some consultants are finding IS executives increasingly receptive to role playing and other activities associated with personal growth as publicity about them has made them more acceptable.

Role playing and related methods are often intended to develop interpersonal skills used in motivating, coaching and counseling subordinates, managing conflicts, running meetings and understanding nonverbal communication.

In teaching a manager how to deal with a subordinate who is not performing well, for example, a participant would play the subordinate and a role-playing encounter between the two might be videotaped. "As we play back the video, people can yell 'Stop,' and we freeze the frame and talk about it," says Madeline Weiss, a director of the Society for Information Management and president of Weiss Associates, Inc., a Bethesda, Md., consulting firm.

There is one other thing upwardly mobile IS executives should keep in mind: the need to stay current with technology. Tollete says they should do so even as they come across as businesspeople rather than techies. He often asks candidates about technological topics such as Systems Application Architecture and Enterprise Systems Architecture. "When they say I don't know what you mean, I don't think they're staying current, and I get real turned off," Tollete says.

Bredin is a free-lance writer based in New York.

Course catalogs

Information for education programs described in the article can be obtained from the following sources:

Aresty Institute of Executive Education
200 Steinberg Conference Center
The Wharton School
University of Pennsylvania
Philadelphia, Pa. 19104
215-898-4560

Index Institute
Index Group, Inc.
Five Cambridge Center
Cambridge, Mass. 02142
617-492-1500

Life Office Management Association
5770 Powers Ferry Road
Atlanta, Ga. 30327
404-951-1770

Alan F. White
Executive Education
Sloan School of Management
50 Memorial Drive E52-126
Cambridge, Mass. 02139
617-253-7166

The Conference Board, Inc.
P.O. Box 4026
Church Street Station
New York, N.Y. 10261
212-759-0900

Weiss Associates, Inc.
5711 Bent Branch Road
Bethesda, Md. 20816
301-229-8062



Pacific Bell's Sutter



LOMA's Purr



Index's Popper



Guide's Parke

Guide members elect education president

BY ELLIS BOOKER
CW STAFF

CHICAGO — Guide International Corp. has an education president in Benjamin G. Parke, who was elected to a two-year term last month by the national IBM users group.

"The thing we want to focus on in [the] next two years is offering a first-class educational program from both a management and a technical standpoint," said Parke, who is responsible for planning at Burlington Industries, Inc., in Greensboro, N.C. Parke was previously Guide's vice-president of planning and finance.

Although a hot topic for Guide's 2,850 member companies is application development and computer-aided software engineering (CASE) in light of IBM's AD/Cycle announcement earlier this year, "we intend to cover everything an IBM shop needs," Parke said.

The beefed-up technical program at the group's three annual conferences will include a special session devoted to OS/2 at Guide's March 11-16 meeting in San Francisco.

Parke's agenda also includes consolidating four of the group's nine topic divisions. Beginning in March, the Management and Administration division will be combined with the Processing and Management division and the Data and Productivity Man-

agement division will be merged with the Development Methodology and Products division.

The consolidation will be completed by the group's July meeting, Parke said.

In addition, the group will try to improve its internal use of information systems, according to Parke.

When asked about closer ties with the two other major IBM users groups — Share and Common — Parke noted that close relations are maintained among the three groups but "we have no plans to merge... I don't see that occurring on the horizon."

Parke said that Guide will continue its participation in the 3-year-old International Users Group Council (IUGC). Share and Common are also members of IUGC.

Parke was elected Nov. 8 at Guide 75 in Los Angeles. Gary S. Gesme, Guide's president for the past two years, will remain on the board as immediate past president.

Elected along with Parke were the following people: Vice-President of Administration Fred Schweizer, Con Edison, New York; Vice-President of Conferences Jim Keithly, Halliburton Co., Duncan, Okla.; Vice-President of Finance and Planning Harry Hartman, Procter & Gamble, Cincinnati; and Vice-President of Divisions Don Langstron, Schering-Plough, Memphis, Tenn.

TAKING
CHARGE

Clinton Wilder

IS has come a
long way, baby

I was pondering how best to summarize the evolution of information systems management in the 1980s for a decade-ending column when the phone rang.

"Good afternoon, Mr. Wilder. I'm calling from the XYZ [not the real name] public relations agency, and I wondered if I could take a few minutes of your time?"

It was Friday afternoon after deadline, so I reluctantly agreed. I took a break from my lofty thoughts on the changing mission of IS as we enter the '90s and prepared myself for a pitch about some digitizer pen vendor's opening of a new sales office in Dubuque. What I heard was something very different.

"My client is the data center at [a Fortune 150 firm], and I wondered if you'd be interested in a story on some of the innovations they have achieved to help their firm's business strategy?"

"Now let me get this straight. You say that you represent the data center, not a vendor whose products they use."

"That's right."

"And this is an internal department, not selling IS services outside in the marketplace?"

"Right. Would you be interested in how they've helped other functions within the company, like manufacturing and sales, improve their business processes?"

Yes, I would. And thank you for the column idea — because this conversation would not have occurred in 1979. IS, as the well-worn saying goes, has come a long way, baby.

Let's think back for a minute to that time, with Jimmy Carter in the White House, hostages held in Iran, and rampant talk of a U.S. boycott of the upcoming Summer Olympics in Moscow. Automated teller machines were a relative novelty, and no one had ever heard of frequent flyer programs, let alone chief information officers.

Ten years and 1½ stock market crashes later, the IS profession has changed from a high-stability, low-profile support function to one of the most exciting, challenging and frightening places to be in business today. A place where at least one progressive company has seen fit to aggressively market its own success within IS to the outside media. A place where 88% of the CEOs and senior executives surveyed by *Computerworld* earlier this year agreed that IS "will significantly change the way my company does business in the 1990s."

Like any dramatic change, this transformation was not painless. The simultaneous upheavals in information technology (the PC revolution) and business (globalization, buyouts, new competitive factors) created unprecedented tension as the world demanded that IS and business professionals work as true partners.

It's rough out there, and the eye-pop-

ping turnover rates for top IS executives are only the beginning. At a recent Index Group seminar, University of Minnesota IS professor Jim Wetherbe flashed the phrase "Efficiency vs. Effectiveness" on the screen and asked the audience which word they would more closely associate with the term "computer."

The answer, according to one jesting yet perceptive attendee, was "vs."

Yes, the computer has come to represent contention. That should be no surprise. It is a huge financial investment, and it stores and distributes the lifeblood of any company that hopes to compete in the 1990s: information.

Where that information will reside, who will control it and what form it will take fuels the great debates of our pro-

fessional lives. Centralization vs. decentralization. Outsourcing vs. in-house. Mainframe vs. PC. "Vs." is everywhere.

But that goes with the territory of increased corporate stature. The good old glass house was a peaceful place to be. Excitement came when IBM rolled out a new version of a database or operating system. IS specialists didn't need to understand the business world, and line managers didn't need to understand information technology, so nobody fought.

Oh, there was grouching when applications came out late and over-budget, but the users had to understand that development was more complicated than they could fathom. Now those users are deploying fourth-generation languages to design their own applications for access-

ing Oracle databases from their laptops.

What will the IS world look like in December 1999? Will Merrill Lynch's DuWayne Peterson or United Technologies' John Hammitt make the cover of *Fortune* as CEOs? Will there be Intel 80686-based file servers doing advanced econometric forecasting on Wall Street?

And most important, will users and IS professionals truly be working together to tap the vast potential of information as a competitive resource?

I don't know. But at midnight 13 days from now when the decade comes to an end, drink a toast to how interesting it is going to be to find out.

Wilder is *Computerworld's* senior editor, management.

How Telebit modems made some
fast friends in the LAN industry.

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Then, there's a national developer of communications software that uses Telebit modems and Novell's *NetWare AnyWare*. Throughput between its New York headquarters and remote offices for accounting, E-mail and order entry data has increased fourfold.

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CALENDAR

"Information Strategies and the Bottom Line" is the theme of the *CIO Magazine* and AMR International 1990 Conference, to be held in Laguna Niguel, Calif., Feb. 4-6.

Keynote speakers include Malcolm S. Forbes Jr., president of *Forbes Magazine*; Mitchell Fromstein, chairman and chief executive officer of Manpower, Inc.; Andrew Grove, CEO of Intel Corp.; John Imlay, president and CEO of Management Science America, Inc.; William McGowan, founder and CEO of MCI Communications Corp.; and Jack Simpson, president of Mead Data Central.

For more information, contact *CIO Magazine*, P.O. Box 9208, 492 Old Connecticut Path, Framingham, Mass. 01701 or call Lori Cardarelli at (508) 872-8200.

JAN. 8-14

ATE & Instrumentation West Conference. Anaheim, Calif., Jan. 8-11 — Contact: MG Expositions Group, 1050 Commonwealth Ave., Boston, Mass. 02215.

CD-ROM: The New Medio of the 1990s. Seattle,

Jan. 10 — Contact: Interactive Institute, 557 Roy St., Seattle, Wash. 98109.

PC/Desktop Printing: Expectations & Reality. Monterey, Calif., Jan. 10-12 — Contact: BIS CAP International, One Longwater Circle, Norwell, Mass. 02061.

Pacific Telecommunications Council's 12th Annu-

ol Conference. Honolulu, Jan. 14-17 — Contact: PTC '90, Suite 308, 1110 University Ave., Honolulu, Hawaii 96826.

JAN. 15-21

Technical Conference on the X Window System. Boston, Jan. 15-17 — Contact: MIT X Consortium, Room 217, Laboratory for Computer Science, 545 Technology Sq., Cambridge, Mass. 02139.

Computer Graphics Show. New York, Jan. 16-18 — Contact: Computer Graphics Show, No. 409, 817 Silver Spring Ave., Silver Spring, Md. 20910.

Service and Quality Performance Conference. St. Louis, Jan. 17-18 — Contact: Washington University, Campus Box 1220, One Brookings Drive, St. Louis, Mo. 63130.

Superconductor Applications Global '90 Convention. Long Beach, Calif., Jan. 17-19 — Contact: Supercon-

ductor Applications Association, 24781 Camino Villa Ave., El Toro, Calif. 92630.

Network Security in the Federal Government Seminar. Washington, D.C., Jan. 18-19 — Contact: Infolan Seminars, Attn: Network Security Division, P.O. Box 162323, Austin, Texas 78716.

Software Support Conference. San Francisco, Jan. 18-19 — Contact: Conference Administrator, Institute for International Research, 6th Floor, 331 Madison Ave., New York, N.Y. 10017.

JAN. 22-28

Improving Productivity in EDP System Development. Mesa, Ariz., Jan. 22-26 — Contact: Applied Computer Research, P.O. Box 9280, Phoenix, Ariz. 85068.

Infotext '90. Las Vegas, Jan. 23-24 — Contact: Infotext Publishing, Suite 309, 347000 Coast Highway, Capistrano Beach, Calif. 92624.

Macuser Marketing Conference. San Francisco, Jan. 25-26 — Contact: Macuser, 18th floor, 950 Tower Lane, Foster City, Calif. 94404.

Personal Computing Forum. Into the Seismic Decode: Standards and Earthquakes. Tucson, Ariz., Jan. 28-31 — Contact: Release 1.0, Edventure Holdings, Inc., 375 Park Ave., New York, N.Y. 10152.

An Overview of Information Engineering. Washington, D.C., Jan. 29 — Contact: James Martin Associates, Suite 200, 1850 Centennial Park Drive, Reston, Va. 22091.

JAN. 29-FEB. 5

Executive Forum on Software Futures. San Francisco, Jan. 30-31 — Contact: Digital Consulting, Inc., 6 Windsor St., Andover, Mass. 01810.

Association for Educational Communications and Technology. Anaheim, Calif., Jan. 31-Feb. 4 — Contact: Association for Educational Communications & Technology, 1126 16th St., N.W., Washington, D.C. 20036.

Infocomm International. Anaheim, Calif., Feb. 1-3 — Contact: The International Communications Industries Association, 3150 Spring St., Fairfax, Va. 22031.

Communication Networks Conference and Exposition. Washington, D.C., Feb. 5-8 — Contact: IDG Conference Management Group, P.O. Box 9171, Framingham, Mass. 01701-9171.

FEB. 6-12

Midrange Vendor Conference. Anaheim, Calif., Feb. 10-11 — Contact: National Productions, Inc., 27 Congress St., Salem, Mass. 01970.

Cost-Effective Strategies and New Directions to Increase Your Trading Profits, Reduce Operating Costs and Gain Valuable Market Share. New York, Feb. 12-13 — Contact: Institute for International Research, 6th floor, 331 Madison Ave., New York, N.Y. 10017.

Network '90. Boston, Feb. 12-15 — Contact: Network, 385 Sylvan Ave., Englewood Cliffs, N.J. 07632.

Notional Conference on Software Development. Washington, D.C., Feb. 13-15 — Contact: Conference Manager, U.S. Professional Development, Suite 200, 1734 Elton Road, Silver Spring, Md. 20903.

EDI Conference and EDI Market Impact Studies. Arlington, Va., Feb. 14-15 — Contact: Phillips Publishing, Inc., 7811 Montrose Road, Potomac, Md. 20854.

FEB. 13-19

Association for Computing Machinery Sigforth '90 Workshop on Real-Time Software Development. Dallas, Feb. 16-18 — Contact: ACM, Howard Harkness, 3316 Vine Ridge, Bedford, Texas 76021.

FEB. 20-26

Computer-Aided Multimedia and Presentations Show (CAMMP). New York, Feb. 20-22 — Contact: Barbara Stockwell, Knowledge Industry Publications, Inc., 701 Westchester Ave., White Plains, N.Y. 10604.

Electronic Imaging '90. Washington, D.C., Feb. 20-22 — Contact: U.S. Professional Development Institute, Suite 221, 17434 Elton Rd., Silver Spring, Md. 20903.

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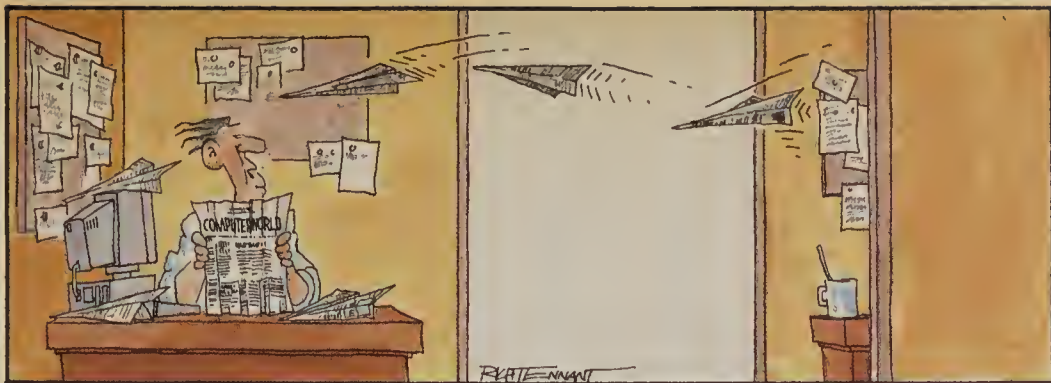
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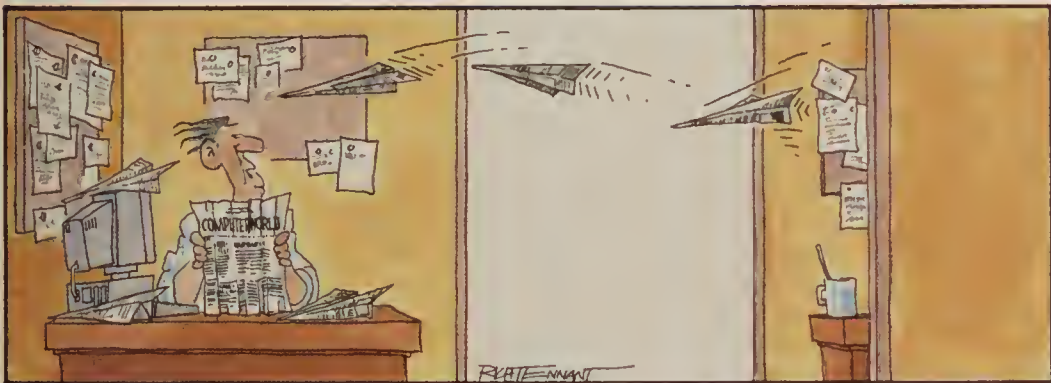
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 - E. Local Area Networks
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The 1980s: A retrospective

A breakthrough decade draws to a close

BY GLENN RIFKIN

Time it was, and what a time it was!

Paul Simon

The 1980s. A collage of images: Ronald Reagan, Mikhail Gorbachev, *Challenger*, Cabbage Patch Kids, Rambo, Trivial Pursuit, earthquakes, hurricanes, Ivan Boesky, Michael Jackson, Jesse Jackson, Mondale, Bush, Quayle, New Coke, cocaine, Michael Jordan, Jim and Tammy Faye, cholesterol, John Lennon, *Cats*, *Batman*, AIDS, famine, Lebanon, Libya, Nicaragua, Spuds MacKenzie — and the Berlin Wall came tumbling down.

In our world, the world of information technology, it was simple, yet stunning . . . a coming of age.

And there were other images: Bill Gates, Mitch Kapor, Charlie Chaplin on skates selling PCs, Ken Olsen, Adam Osborne, Japan and the trade war, MS-DOS, AS/400, OSF, OSI, SAA, alphabet soup, John Akers, Steven Jobs and John Sculley together, Jobs and Sculley apart, Macs, VAX, virus attacks, LANs, WANs, relational plans, Compaq, Unix — and the glass walls came tumbling down.

When it comes to technology, there is an indelible mark on the 1980s. This was the bridge decade that brought computing out of the hands of a few white-coated technicians and into the hands of the people. This was the time that saw the shroud of mystery lifted forever to deliver technology out of the bygone era and into a time of the possible. Hands that had foresworn the keyboard and monitor touched and felt the power of the chip and were transformed.

Americans cooed up to computing in a way no one could have believed in the 1970s. Pac-Man

Rifkin is a *Computerworld* features editor.



MICHAEL MCLAUGHLIN

gobbled its way into our lives and eventually gave way to Nintendo. The personal computer left the hobbyist's workshop and forged its way onto the desks of corporate America. *Time* magazine gave its "Man of the Year" cover to the computer.

Suddenly, we woke up and accepted that computers are part and parcel of our day, like refrigerators, telephones and automobiles. It is not a matter of owning one (although nearly 40 million people do); it is a matter of contact on all levels.

Even the most hard-bitten Luddite finds himself at an ATM now and again or, at the very least, receives the junk mail that spews from computer databases.

For the computer makers, it was a turbulent and rewarding decade. IBM dropped the shackles of antitrust and became a \$60 billion mammoth, moving past Exxon as the most profitable corporation. Big Blue entered the decade as the industry's most powerful force and exits in the same position. But it was a time of cataclysm for the giant, which was forced to dance to a new tune, with many of its market segments shaken and in

some cases snatched away.

The '80s began as the decade of the minicomputer and ends with the mini's death knell being sounded, perhaps prematurely. The land of optimism shifted from East to West, from Route 128 to the Silicon Valley. The Japanese presence spread relentlessly, from semiconductors to PCs to laptops to supercomputers.

Corporations that did not exist in 1980 — such as Compaq Computer and Sun Microsystems — are now firmly entrenched in the Fortune 500, which contains 40 information technology companies, double the number in 1980. Companies such as DEC leapt from No. 187 on the noted list to No. 30.

Some high-fliers going into the decade, such as Wang, Data General and Prime, find themselves floundering and searching for a key to survival. Apple, which entered the '80s as a haven for hobbyists, exits the decade as a \$4 billion blue-suited corporate giant sans Jobs and Wozniak. The BUNCH is simply gone forever. Burroughs and Sperry begat Unisys. Honeywell begat Bull. Control Data begat

red ink. Only NCR remains intact.

Kid millionaires (and some billionaires) turned small venture change into thriving businesses. Entrepreneur became the watchword of the decade. The nerds of high school began showing up in Lamborghinis with Rolex watches and Vail condos.

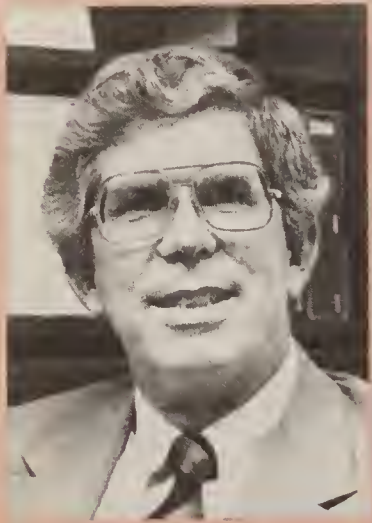
Nontechnology giants such as Boeing and McDonnell Douglas decided to enter the business as well, turning their huge internal investments in technology into profit centers. General Motors went a step further and paid \$2.5 billion to acquire H. Ross Perot's EDS. GM later paid "Raging Ross" \$750 million to go away.

Computing power exploded through the price/performance ceilings. A MIPS that was worth \$1 million in 1980 can be had for under \$1,000 today. Before we even figure out what to do with Intel 286 PCs, we have 386- and 486-based options. Vendors that built empires on proprietary systems are seeing their walls come tumbling down as IS got mad as hell and decided not to take it anymore. E-mail was just a dream in 1980; today, you are lost without it.

Companies that were content with automating the back room and its attendant services now demand to be networked: End users have staked their claim and want access to data immediately. CEOs have spent the money and now want some payback. DPeres are now IS professionals, and woe if they don't understand the business as well as the technology.

As the last lights of 1989 blink out, few will dwell on the decade past. This is a time for looking forward, for predictions, for seeking visions. What will the 1990s bring? How will we prepare for the coming millennium? Why does it seem as if there are more questions than answers . . . always?

But we would be remiss if we did not reflect back on the 1980s, at least for a short time. It was a decade of lessons, and history can teach as no other.



August 1980

With a team of 12 and little interest from Armonk, Philip D. Estridge, manager of Entry Level Systems at IBM, begins work on a PC in Boca Raton, Fla. Under Estridge's guidance, the IBM PC will take the business world by storm, surprising the entire industry.

1980

JANUARY

- A **Computerworld** study finds that DP personnel feel overworked and underpaid.
- **January 17th** marks the 11th anniversary of the filing of the IBM antitrust case by the U.S. Department of Justice. The trial enters its 663rd day, generating nearly 100,000 pages of transcript. The 26th witness, IBM executive John F. Akers, takes the stand.
- **John Mauchly**, a Univac consultant and co-inventor of the Eniac, the world's first all-electronic digital computer, dies at age 72.

MAY

- **Data General Corp.** brings out the Eclipse MV/8000, the company's first venture into the 32-bit computer field.

JUNE

- The technical committee on **OSI** joins ANSI and puts forth its **seven-layer reference model**, which will affect every computer vendor.

AUGUST



- **Gene Amdahl** cuts remaining ties with Amdahl Corp. and begins a new venture aimed at challenging IBM. The new firm is called Trilogy. Amdahl plans to rely on a unique semiconductor technology called the wafer scale integration.



- IBM approaches **William Gates**, the 24-year-old head of Microsoft Corp., and asks him about developing a PC operating system.
- **Shugart Associates** announces Winchester disk drives. This "hard" drive stores 30 times more data than a single floppy disk.

SEPTEMBER

- The U.S. installed base of **small computers** is 478,000, according to International Data Corp. Of that number, 107,000 are small-business computers and 371,000 are desktop machines.
- **Amsat** (The American Satellite Co.) unveils the first **satellite network** providing all-digital transmission.
- **Honeywell, Inc.** is found guilty of fraud, the result of misrepresenting a computer system in order to meet its yearly sales quota. The firm is forced to pay \$1.1 million to Robert Weinstein, former president of Triangle Underwriters, Inc. The prosecution successfully argued that Weinstein's company was forced out of business in late 1974 as a result of an untested and inoperable Honeywell system purchased 4 years earlier.



- **W. Michael Blumenthal** becomes chief executive officer of Burroughs Corp.
- **High-end IBM 4341** arrives, dedicated to MVS with 80% faster throughput and twice as much main memory as original model.

OCTOBER

- **Digital Equipment Corp., Intel Corp. and Xerox Corp.** announce specifications for jointly developed **Ethernet** protocol.

- **There are more than 300,000 women** in the information processing industry, according to WIP (Women in Information Processing).

NOVEMBER



- Computers enable NBC to be the first network to announce **Ronald Reagan's** presidential victory at 8:15 p.m. EST.

DECEMBER

- **Las Vegas:** Eight **Comdex** visitors die in fire at MGM Grand Hotel. More than 450 people in town for the show are trapped in the hotel for as long as 6 hours.
- Enactment of the **Computer Software Copyright Act** gives copyright protection to software.



- **Apple Computer, Inc.** goes public. Every share of the 4.6 million offered is bought within minutes of the offering, making this the largest public offering since Ford Motors went public in 1956. At least 100 Apple employees reportedly become millionaires this day.
- IBM announces **Displaywriter**.

1981

JANUARY

- **Blumenthal** is named chairman of the board at Burroughs.
- **Intel Corp.**, highflier in the IBM 370 lease and used equipment market, files for bankruptcy after IBM's announcement of the 4300 series. Intel had written cancellation clauses into its leases, and its insurer, Lloyd's of London, lost heavily when users terminated the leases prematurely. Intel's liability is approximately \$100 million.

FEBRUARY

- **Greyhound Corp. v. IBM** — one of the longest-running antitrust suits against IBM (began in 1969) — is settled out of court with IBM to pay \$17.7 million in legal costs to Greyhound.

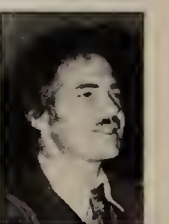


MARCH

- U.S. Defense Secretary **Casper Weinberger** urges the government to drop its suit against AT&T because, he maintains, forcing the company to divest its Bell operating companies would weaken national security.

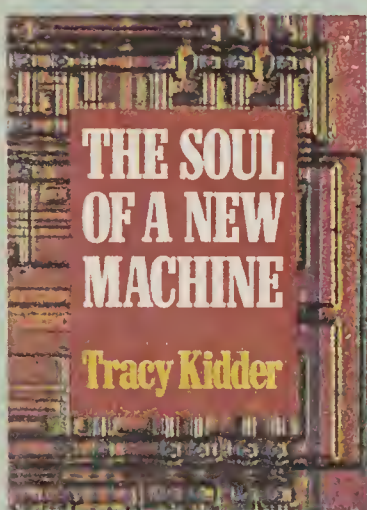
APRIL

- **Adam Osborne's Osborne Computer** introduces the Osborne 1, the first portable computer. The company will sell more than 100,000 by 1984.



JUNE

- **U.S. v. IBM** rests after 12 years.

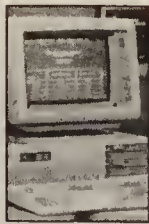


August 1981

Tracy Kidder publishes *The Soul of a New Machine*, a book that chronicles the development of DG's 32-bit supermini, the Eclipse MV/8000, code-named "The Eagle." Kidder spent 2½ years with the DG project team. His book will receive the Pulitzer Prize for general nonfiction in April 1982.

AUGUST

- **The IBM Personal Computer** is unveiled. The machine is priced from \$1,565 to \$2,100 and offers 16K to 256K bytes of memory. The machine has virtually no applications available but thousands of software programs will soon appear.



- IBM gives its SNA users **X.25 and X.21 gateways** to public data networks.

SEPTEMBER

- **U.S. District Judge Harold Greene** refuses to discuss the bulk of the government's charges against AT&T with the press and indicates that the Justice Department has proven AT&T guilty of violating the Sherman Antitrust Act.



NOVEMBER

- In Tokyo, the Japanese government and eight major electronic and computer makers kick off the "**fifth-generation project**"; a 10-year, multimillion-dollar effort to develop an artificial intelligence machine.

DECEMBER



- **U.S. Navy Captain Grace Murray Hopper**, computer industry pioneer, turns 75.

MAY



- **DEC** unveils its own line of PCs — the **Rainbow 100, Decmate II and Professional Series** — amid great hoopla. Unable to choose one machine to sell, DEC sends all three to the market and will eventually lose close to \$1 billion on the foray.

- According to a study by the New Jersey Institute of Technology, 20% of 500 scientific network users are found to be suffering "**Network Addiction**" — they can't get enough of **E-mail**.

JUNE

- **American Bell, Inc.** is formed and named by AT&T.
- Bank swindler **Harold Rossfields Smith**, arrested for using the Wells Fargo Bank computer system to embezzle \$21.3 million — the largest heist in U.S. history — gets a 10-year sentence.

JULY

- **The Travelers Insurance Co.** becomes one of the first major corporations to commit to **PCs** rather than CRT terminals.

AUGUST

- **Robots are predicted** to displace 15% of workers by 1990. A new study by the Congressional Budget Office forecasts that 15% of current U.S. manufacturing workers could lose their jobs by the end of the decade because of electronic technology.
- The **computer** replaces the **abacus** to handle the Chinese census, which must count more than one billion people.
- Warrants are issued for nine **Hitachi** employees recently indicted for conspiring to steal IBM trade secrets and transport them to Japan — part of 22-member ring.

OCTOBER

- **The White House** announces an ambitious long-term plan to fundamentally change the structure of the federal government. A prominent feature of the "Reform 88 Project" is governmentwide compatibility of all administrative computer and communications systems.

- **Honeywell** announces new top-of-the-line processor, the DPS 88, designed to compete with IBM's 3083 Models J and K.

NOVEMBER

- **Compaq** introduces a **portable** processor compatible with IBM's PC. The design for the machine was sketched out on a restaurant placemat, which is still kept in a safe at the Houston-based company.

DECEMBER

- **Microsoft Corp.** licenses MS-DOS to 50 microcomputer companies in the first 16 months of its availability.

JANUARY



AT&T

services for at least seven years.

- **AT&T** agrees to give up 22 Bell operating companies after the Justice Department spends eight years and several million dollars prosecuting the phone company. The goal is to create competitive communications rates. Divestiture is scheduled for January 1984 and stipulates that AT&T cannot offer any electronic information

- **Compaq Computer Corp.** is founded by Rod Canion, Bill Murto and Jim Harris.

- **Sun Microsystems, Inc.** is founded by Scott McNealy, Bill Joy and Andy Bechtolsheim.

FEBRUARY



APRIL



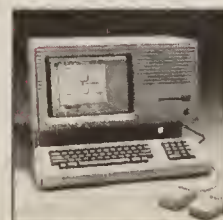
- **Mitchell Kapor**, a former teacher of transcendental meditation, along with **Ben Rosen** found **Lotus Development Corp.** in Cambridge, Mass., with \$1 million in venture capital and eight employees.

- **DEC** unveils the **VAX-11/730**, the latest entry in its 32-bit line.

JANUARY

- **Apple** announces innovative **Lisa** system, a 16-bit micro priced at \$10,000 and aimed at the business market. Lisa is a flop but paves the way for the Macintosh.

- **Lotus Development Corp.'s** 1-2-3 ships. Sale of copies reach \$53 million in the first year.



May 1982

The human race is predicted to die in favor of "living" robots and eventually become a cyborg phenomenon (a biological system with a nonbiological implant, like a tooth filling), in which the best of the AI systems and artificial organs will be implanted and buttressed by genetic engineering, according to Arthur Harkins, director of the graduate program in futures research at the University of Minnesota.



January 1983

Deviating for the first time from its annual "Man of the Year" proclamation, *Time* magazine names the computer "Machine of the Year" for 1982. This reflects the amazing impact the computer is now having on society, according to the magazine.

- **Compaq** ships its first computer in January and ends the year at \$111.2 million, the greatest first-year sales in the history of U.S. business.

- **OPM Leasing Services, Inc.** Cofounders Myron Goodman and Mordecai Weissman are found guilty of obtaining \$200 million in cash between 1978 and 1981 with altered or completely phony leases, mostly from Rockwell International. Principals are sentenced to 12 and 10 years in prison, respectively.

FEBRUARY

- **John Akers** moves from senior vice-president to president of IBM.

- The number of computers in the U.S. exceeds **10 million**.

APRIL

- **John R. Opel** becomes chairman of the board of IBM, replacing Frank T. Carey.



- **John Sculley** leaves Pepsi Co. and comes to Apple as president and CEO at the behest of **Steven Jobs**.

- **Charles E. Exley Jr.** is named CEO at NCR Corp.



MAY

- **Steven Jobs**, chairman of Apple, rents **Disneyland** during the National Computer Conference in Anaheim, Calif., and invites a few thousand of his closest friends to have a free night at the amusement park.

JUNE



- **Archie McGill** resigns as president of **American Bell's** Advanced Information Systems just one day after a corporate reorganization by AT&T strips American Bell of its responsibility for consumer telephone product development and marketing.

- IBM ships its **Multiple Virtual Storage/Extended Architecture**.

- IBM unveils its relational database offering for its MVS/XA and MVS/370 environments: **DB2** is born and will eventually reshape the independent database market.



- Recently elected Senator **Frank Lautenberg** (D-N.J.) makes his maiden speech to a nearly empty Senate chamber. Lautenberg, former chairman of ADP, says, "The capacity to use and work with computers is becoming essential — almost as essential as being able to read and write clearly."

- **IBM** is shipping 35,000 of its **PCs** per month and cannot keep up with demand for the machines.

JULY



- **C. Gordon Bell**, former engineering guru at DEC, joins Kenneth Fisher, previously from Prime Computer, Inc., and Henry Burkhardt from DG to form **Encore Computer Corp.** Goal: to build a new generation of small computers.

- DEC President **Ken Olsen** is the subject of an extortion attempt of \$1.25 million by a former Green Beret, who is caught and jailed.

- **U.S. District Judge Harold Greene** decrees that AT&T must relinquish virtually all rights to the Bell name and logo when the divestiture goes into effect January 1984.



- **The National Academy of Science** reports that it could find no evidence of eye damage because of the use of **VDTs**.

- **DG** introduces its own proprietary line of PCs called the **Desktop Generation**.

AUGUST

- **DEC** buys into Gene Amdahl's **Trilogy** with a \$26 million investment. This infusion of cash swells the amount its founders have raised to about \$260 million. The company has yet to produce anything for sale.

- **DEC** profits plunge 32% for the year, its first decline in annual profits in 13 years.

OCTOBER

- **MCI Mail** from MCI Communications Corp. is unveiled.

- IBM takes wraps off biggest mainframe yet, a new version of the **3084**.

NOVEMBER

- **IBM's** ill-fated home computer, the **PCjr**, debuts.

- **Eagle Computer** President **Dennis Barnhart** dies in an automobile accident, the same day the company makes its first public stock offering.

1984

JANUARY

- **Divestiture of AT&T** is official. Seven regional Bell operating companies are free to do business. Ma Bell, as we know her, is dead.

- **Franklin Computer Corp** settles a BIOS copyright dispute with Apple by paying \$2.5 million. Franklin, which manufactured Apple II clones, is forced into **Chapter 11**.

- **Robots debut** as prison guards. Denning Mobile Robotics, Inc. announces it will provide mobile robots to Southern Steele Co. in San Antonio, which in turn will sell the devices to prisons to be used as guard devices. Pioneer robocops do not replace guards but will perform such tasks as patrolling cells at night.

- Apple introduces the **Macintosh**. The computer draws rave reviews for its graphics and ease of use but criticism for its small 9-inch screen and 128K-byte memory limit.



APRIL

- AT&T enters computer industry with Unix-based, 32-bit processors called the **3B line**, which includes a multiuser micro and five superminis.

- **Wang Laboratories, Inc.** introduces its largest processor to date, the VS300, which has three times the internal performance of the former top-of-the-line VS100.

- **President Reagan** gives the U.S. Department of Defense power to review computer exports to 12 non-Communist countries widely suspected of being shipment points to the Eastern Bloc.



June 1984

In a move that rocks the information processing industry, H. Ross Perot agrees to sell **Electronic Data Systems** to **Roger Smith** and **General Motors** for \$2.5 billion. The synergy between GM and EDS is not immediately evident, and soon Perot begins to openly criticize Smith and his operation. Eventually, GM will pay Perot \$750 million to give up his role as EDS chairman and leave GM alone.

- Total number of **computer magazines** published in U.S. grows to 450.
- \$50 million worth of computer equipment will be used at the **Summer Olympics** in Los Angeles.
- **IBM** turns out a prototype of its 1M-bit dynamic RAM chip — the first of that size made by an American company.



- **Charles Exley Jr.** is named chairman of the board at NCR.



MAY

- **Cobol's** 25th anniversary. Developed in 1959 as a stopgap language, it has become the most widely used programming language in the business world.
- **Ashton-Tate Corp.** unwraps **Dbase III** relational DBMS product for microcomputers. Dbase II is the world's most widely installed microcomputer DBMS.

JULY

- The U.S. House of Representatives takes less than 45 minutes to OK a **computer crime bill** that makes unauthorized access of computers used by the federal government or in interstate or foreign commerce a felony.

AUGUST

- IBM unveils high-end **PC AT**, built around the Intel 80286 chip.
- **The Tandy 1000 PC** becomes the **No. 1** selling IBM PC compatible in its first year.

SEPTEMBER

- After a year-long legal battle, **Visicorp** agrees to pay **Software Arts** \$500,000 and relinquish all trade and marketing rights to Visicalc.

OCTOBER

- Statement of direction for IBM's **Token-Ring** LAN is announced.
- IBM purchases **Rolm Corp.**, its first acquisition in 22 years.

DECEMBER

- **NCR Corp.** celebrates its 100th birthday.

NCR

1985

FEBRUARY

- **John Akers** becomes IBM CEO and president.
- **Bankamerica** inaugurates \$5 billion overhaul of IS under the direction of **Max Hopper**, the newly named executive vice-president for systems engineering.

- IBM's **Sierra**, known as the **3090**, is presented to the public. Model 200 offers roughly the same performance as the 3084 but takes up 50% less floor space; the Model 400, not expected until 1987, is said to offer about twice the performance of the 3084.

- **Aldus Corp.** introduces **Pagemaker** for the Macintosh and kicks off the **desktop publishing** era.

MARCH

- **National Advanced Systems** announces two mainframes called the AS/XL series to compete with IBM's Sierra series.

APRIL

- Japan's Prime Minister **Yasuhiro Nakasone** pledges to open his country's domestic markets to foreign imports.
- **Lotus** acquires **Software Arts, Inc.**, along with the Visicalc package.

MAY

- Apple announces it will stop production of the **Lisa**. Only 60,000 machines will be sold in two years.
- AT&T names **James E. Olson** president and chief operating officer.
- **William Lowe** is named head of Entry Systems Division, replacing the transferred **Philip Estridge**. Tragically, Estridge dies in an Aug. 2, 1985 plane crash at the Dallas/Fort Worth Airport.

JUNE



- **MCI** wins \$38 million from AT&T in antitrust suit, to be tripled under federal antitrust law to \$113 million. MCI Chairman and CEO **Bill McGowan** is undecided about whether to appeal the award, although he says the amount is insufficient to compensate for damages that MCI has suffered.
- Difficulties for the **minicomputer** industry begin to crop up. **Wang** has first quarterly loss in 12 years and lays off 1,600.

- **Sperry Corp.** and **Burroughs** announce merger negotiations.
- Lotus announces termination of **Visicalc**, the first popular electronic spreadsheet.
- **DG** has first loss in its 16-year history, lays off 1,300.
- **Cray Research, Inc.** announces the **Cray-2**, a \$17.6 million, Unix-based supercomputer.
- Texas Instruments President and CEO **J. Fred Bucy** resigns after 32 years and is replaced by Executive Vice-President Jerry R. Junkins.

AUGUST



- Acknowledging that he is never going to become chairman of family-owned Wang, **John F. Cunningham** leaves the Wang presidency to become chairman of Computer Consoles, Inc.
- **AT&T**, in the largest consolidation since divestiture, cuts 24,000 workers from the Information Systems Group.

- **IBM** and **Microsoft** sign pact to jointly develop future operating systems and systems software products.
- IBM announces it has officially begun volume shipping of its **3090** Model 200 mainframes. The first user is **Texaco**.
- Displaying the shortsightedness that will haunt many longtime vendors, **Wang** introduces a non-IBM-compatible PC called the **Advanced Professional Computer**, built around Intel's 80286 chip.

SEPTEMBER

- AT&T and Sun announce that they will work together on a convergence of **Unix System V** and University of California's **Berkeley 4.2** version, the beginning of a controversial alliance.



April 1985

Internal Revenue Service computers running new Cobol programs break down and cause major delays in processing tax returns and sending refunds.



- **Steven Jobs** leaves his beloved Apple after a cataclysmic confrontation with John Sculley, amid charges that he raided the company of five key people with whom he planned to start an educational computer firm. He later will found **Next, Inc.**

OCTOBER

- **Intel** announces that it is getting out of the dynamic RAM market because of losses and intense competition from Japan.
- Intel unveils the **80386 chip**. Although mass production is not expected until late 1986 or early '87, vendors are expected to begin development of a new generation of computer hardware.
- IBM's **Token-Ring** debuts.

NOVEMBER

- As the computer industry slump continues, **Control Data Corp.** reports a third-quarter loss of more than \$255.6 million.
- **Max Hopper** leaves **Bankamerica** for **American Airlines**, less than 10 months after he was named executive vice-president of the bank's Systems Engineering Group. American Airlines made him an offer impossible to resist, he says. Reports indicate that Hopper's TPF conversion at Bankamerica cost nearly \$200 million and fell far short of the bank's expectations. He returns to American Airlines as senior vice-president of information systems.
- Microsoft finally begins shipping **Excel** for the Mac and says it will be available for MS-DOS machines sometime in 1986.



June 1986

John R. Opel will turn over the IBM chairmanship to President and CEO John F. Akers on June 1, giving the top three positions at IBM to one man for the first time since Frank Carey held those spots in 1973. Akers will preside over perhaps IBM's most difficult period as a major corporate entity as the huge company must reorganize and cut back heavily because of heavy industry pressure and repeated slumps.

1986

JANUARY

- IBM unveils its first **RISC** system — the 32-bit RT workstation.
- After spending approximately 10 years and \$1 billion trying to make **NET 1000** portable, AT&T pulls the plug on the value-added packet-switched network.
- **John Sculley** is named chairman of Apple and extends an invitation to Steve Jobs to return to the company someday.

FEBRUARY

- **Microsoft** files for initial public stock offering. About 24.7 million shares will be outstanding after the offering, giving the company a market value of between \$395 million and \$470 million. **Bill Gates** will retain 44.9% ownership, about 11.1 million shares, and will eventually be worth more than \$1 billion by age 31.
- **Osborne Computer Corp.**, the pioneer of portable computing that sought protection from creditors in August 1984, defaults on its reorganization plan, and a bankruptcy court orders the firm's capital equipment and inventory to be liquidated.

MARCH

- **HP** launches its long-awaited RISC offerings, called the **Spectrum** Series 930 and 950.

APRIL

- **Compaq** makes the Fortune 500 in its fourth year of existence.

JUNE

UNISYS

- **Blumenthal** announces that the merger between **Burroughs** and **Sperry** is finalized; the new company will be called **Unisys Corp.**

- **Jim Manzi**, president and CEO of Lotus, takes post of chairman after founder **Mitchell Kapor** resigns.

- **Wang slashes** work force; 1,600 jobs are cut, mainly through voluntary layoffs.



AUGUST

- **Rear Adm. Grace Murray Hopper**, co-developer of Cobol and the woman responsible for standardizing computer languages and procedures throughout the U.S., is forced to retire by the Navy.

SEPTEMBER

- **Honeywell** cuts 4,000 jobs but denies speculation that the company will be sold.

OCTOBER



- IBM unveils its vaunted "Vaxkiller," the **9370** midrange system. The system turns out to be a disaster for Big Blue.

- **Compaq** beats IBM to market with an Intel 80386-based system.

NOVEMBER

- **Computer Associates International, Inc.**, setting its sights on becoming the industry's first billion-dollar independent software company, proposes its second major acquisition in as many weeks by signing a letter of intent to acquire General Electric Co. subsidiary **Software International Corp.** A week earlier, CA made a \$70 million tender offer for **Integrated Software Systems Corp.**



- **Fred Wang** succeeds his father **An Wang** as president of Wang Laboratories. An Wang remains chairman and CEO.

DECEMBER

- **H. Ross Perot** agrees to leave the General Motors board and functional leadership of EDS for \$750 million but gives GM honchos until Dec. 15 to think it through, just in case they change their minds.
- **Computerworld** publishes its 1,000th issue.
- Plans are announced for the merger of **Honeywell's** Information Systems division with **Compagnie des Machines Bull** and **NEC Corp.**



1987

FEBRUARY

- Hewlett-Packard Co.'s co-founder, Vice-Chairman **William R. Hewlett (r)**, retires from the board. Hewlett, 73, founded the minicomputer and scientific instruments firm in 1939 with partner **David Packard** and has served on the board since HP was incorporated in 1947.



- Interest in **IBM's 3090** wanes since June, while the older 3080 processor line grew in popularity during the six months leading up to the restructuring of the 3090 family.

- **The Boston Computer Society**, started by 13-year-old **Jonathan Rotenberg** in 1977, celebrates its 10th anniversary. The BCS, with 23,000 members, has grown into the largest and most powerful PC user group in the world.

MARCH

- Apple introduces its long-awaited **Macintosh SE** and **Macintosh II**.

- **Oliver North's** shredders miss dozens of electronic mail messages from the National Security Council's IBM Professional Office System. The dispatches, sent on **Profs**, prove crucial to the president's Tower Commission investigation of the White House scandal over aid to Iran.



- IBM introduces its **Systems Application Architecture**.

APRIL

- IBM introduces **Personal System/2** and discontinues nearly all PC XT and AT models. The company, along with Microsoft, also announces **OS/2**, to be available next year.



MAY

- **Lotus celebrates its** fifth anniversary by signing a 10-year joint marketing and development agreement with IBM. The agreement will put Lotus spreadsheets on IBM mainframes and lead to a series of future applications jointly developed and marketed by the two companies. Little is ever said again about the agreement.

- **The National Computer Conference** convenes for the last time. The show peaks in attendance in 1983 with 97,000 and falls to 15,000 in 1987.



- DEC's **Rainbow**, introduced 5 years ago this month, is killed in favor of DEC's **Vaxmate**, a more powerful IBM PC AT-compatible system designed with VAX connectivity in mind. The Vaxmate is also a flop.

JUNE

- **Charles Wang's CA** makes its biggest purchase ever by acquiring systems software rival **Uccel Corp.** for \$800 million.

- A recent survey finds that top information systems **students** are shunning IS positions. The industry slump, coupled with a list of diverse and unsettling factors, is resulting in declining interest in IS as a career and creating a growing crisis in IS education.



SEPTEMBER



- DEC, riding the crest of a remarkable two-year surge, holds its **Decworld** exhibition in Boston, drawing 50,000 visitors and the QE2 to the DEC-only show. DEC stock is trading near \$200 per share, and the company can't hire enough workers to keep up with demand for its products.

- Federal arbitrators grant **Fujitsu Ltd.** unprecedented access to IBM systems software source code in an extraordinary resolution of the five-year struggle over rights to the IBM code.

- Lotus founder **Mitchell Kapor** forms a new microcomputer software company that plans to develop what will be a new class of personal productivity applications. The company is called **On Technology**.

NOVEMBER

- IBM claims to have shipped one million **Personal System/2s**.

DECEMBER

- An irate member of Congress takes to "**Toshiba bashing**" — literally standing outside the Capitol with sledgehammers and slamming away at Toshiba radios. Toshiba was found to have violated U.S. trade sanctions by selling advanced technology to the Soviets.
- **Compaq** reaches \$1.2 billion in sales in its fifth year.

.....1988.....

JANUARY

- **New York Stock Exchange** imposes — for one week, at least — restrictions on program trading on any day the Dow Jones industrial average moves 75 or more points.
- **AT&T** will acquire 20% of **Sun** stock over the next 3 years and is given a seat on its board.
- **Apple** and **DEC** announce a joint agreement to work on developing workstation and connectivity products for Macs and the VAX.

FEBRUARY

- IBM, after two years of drooping profits, initiates a **massive reorganization** and moves key product design, manufacturing and marketing to 5 independent business units.
- **Prime** succeeds in **Computervision** takeover. Computervision will become the CAD/CAM division of Prime.
- IBM announces **MVS/ESA**, a high-end mainframe operating system that supports vastly greater amounts of memory than its XA predecessor.



MARCH

- **Apple** charges **HP** with violating its copyrighted user interface. The Cupertino, Calif., firm files a law suit that claims that Microsoft's Windows Version 2.03 and HP's New Wave products infringe on its copyrighted interface. Bill Gates responds that the 1985 license agreement invalidates the Apple suit.
- AT&T Chairman and **CEO James Olson**, who has been on the job for 18 months, takes a leave of absence to recuperate in Short Hills, N.J., after surgery to remove a malignant tumor.

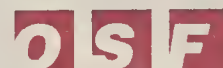


APRIL

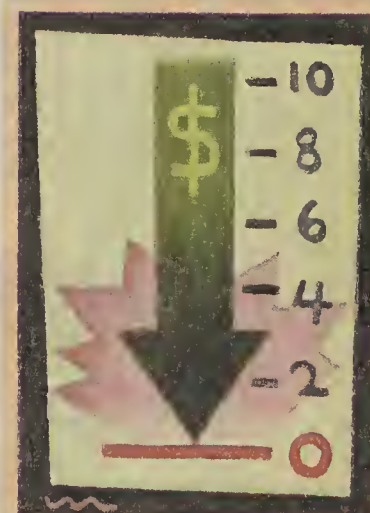
- **Olson** dies of cancer. **Robert E. Allen** is appointed chairman and CEO by the AT&T board.

JUNE

- **One day** after the expiration of his noncompete agreement with GM, **H. Ross Perot** announces the formation of Perot Systems Corp., a private firm that will seek federal government computer services contracts.
- **The Open Software Foundation** is created by IBM, DEC and HP in an angry response to the AT&T-Sun alliance on Unix.



- In a massive publicity event, IBM unveils the **AS/400** (code-named Silverlake), a merger of its System/36 and 38 lines into a unified architecture.



October 1987

After serious declines in the Dow Jones industrial average the previous Friday, the stock market goes into a free-fall on Monday, Oct. 19, dropping more than 500 points for the day, the most in history. Black Monday is blamed partially on computerized program trading of stocks, which set off the selling frenzy.



October 1988

Steve Jobs introduces his company, **Next, Inc.**, and his PC, called the **Next workstation**. The sleek workstation incorporates immense power with leading-edge ease of use and breakthrough optical-disk storage for such a machine. The computer is initially targeted for only the academic community, making many industry observers wonder how Jobs will succeed. A short time later, Jobs signs an agreement with **Businessland, Inc.** and changes his mind about selling to business.



- **Sematech** consortium picks Austin, Texas, as its home and chooses **Robert Noyce** to head the effort.
- A consortium of PC companies led by **Compaq** introduces a counterstandard to IBM's PS/2.

OCTOBER

- **Joe Henson** resigns as CEO of **Prime**.

NOVEMBER

- **Robert Morris Jr., 23**, is arrested at Cornell University for allegedly unleashing a major virus that crippled thousands of computers linked to the Internet network. In only two days, the virus spread through 6,000 computers, widely cloning itself and causing machines to fill their memories to a point at which they could not function.

1989

JANUARY

- **Honeywell Bull, Inc.** announces that it will streamline its U.S. work force by 1,600, or about 16%.

MARCH

- **National Advanced Systems** is sold in its entirety to a joint venture between **Hitachi Ltd.** and **EDS**.
- **Exxon Valdez oil spill**. Exxon uses PCs to set up databases for mapping oil spill and tracking loss of animal life.

APRIL

- This month marks the silver anniversary of IBM's **360** architecture, a revolutionary design that changed the way businesses used computers.

MAY

- **SAA** arrives with the announcement of **Officevision**, an attempt to provide protocols and interfaces to tie together IBM's corporate systems and make a seamless environment in office automation, according to IBM.

- **Prime** fights a takeover attempt by **MAI Basic Four, Inc.** Prime Chairman David Dunn challenges MAI Chairman Bennett LeBow to make good his vaunted \$20 per share — \$970 million — offer by June 2. One day before deadline, MAI amends offer to cover only outstanding shares, about 75% of Prime's total.

- **HP** announces takeover of **Apollo Computer, Inc.**

JUNE

- **Sun** posts its first quarterly loss since going public in 1986 because of botched cutover from HP mini to an IBM-compatible mainframe complex, delaying thousands of orders.



- **Jack Kuehler**, former vice-chairman of IBM, is named president while Akers continues as chairman and CEO.

- Venture-capital pioneer **J. H. Whitney** saves **Prime** from a hostile takeover attempt by MAI by entering into a friendly takeover deal with the troubled mini maker.

JULY



- Winds of financial trouble emerge at Wang as **An Wang, 69**, undergoes cancer surgery.

AUGUST



- **Richard Miller**, head of GE's consumer electronics business, becomes **Wang's** new president and CEO, taking over for Fred Wang in a turbulent shake-up at the troubled company. Wang officially posts fiscal year loss of \$424.3 million.

- **Ardent Computer Corp.** and **Stellar Computer, Inc.** announce plans to merge; new company will be named **Stardent**.

SEPTEMBER



- **CA** acquires John Cullinane's **Cullinet Software, Inc.**

- **Apple** unveils long-awaited **Macintosh portable**.

OCTOBER

- **Intel** delivers **80486** chips.
- Proposed sale of **Zenith Data Systems Corp.** to **Groupe Bull** is announced.
- A *Computerworld* survey names **MIT** as the top information systems graduate program in the U.S. Filling out the Top 10 schools are **Georgia State University**, **University of Minnesota**, **New York University**, **UCLA**, **University of Arizona**, **Indiana University**, **University of Texas at Austin**, **University of Pittsburgh** and **Georgia University**.
- **Both Tandem Computers, Inc.**, with its Cyclone, and **DEC**, with the VAX 9000, enter the mainframe market.

- A major earthquake hits Northern California, killing scores and leaving billions of dollars worth of destruction. Computer systems take a beating but keep on ticking in virtually all locations, and major Silicon Valley companies hardly miss a beat.



NOVEMBER



- DG founder and CEO **Edson de Castro** turns over CEO post to **Ronald Skates** and moves on to chairman's role after 22 years of leading the minicomputer maker.

- As mergermania continues, **Dun & Bradstreet Corp.** purchases **Management Science America, Inc.** and then merges it with D&B's **McCormack & Dodge** division. The new \$200 million software giant is called **Dun & Bradstreet Software Services**.

DECEMBER

- As the industry slump marches on, **IBM** announces more restructuring. The company will take a \$2.3 billion charge against fourth-quarter earnings and seek to cut its work force by 10,000 through restricted hiring and increased attrition programs.
- The total number of computers in the U.S. is **54 million**, according to IDC.

This time line was researched and produced by **Computerworld** staffers **Glenn Rifkin**, **Kim Nash**, **Jodie Naze**, **Lorraine Witzell**, **Cathy Duffy**, **Joseph J. Fatton**, **Gail Rizzo** and **Kim Pennett**. Design was done by **Tom Monahan**.



February 1989

For the first time, an individual is brought to trial and convicted under the **Computer Fraud and Abuse Act of 1986**. **Herbert Zinn Jr.** is sentenced to nine months in prison with no opportunity for parole and fined \$10,000 for illegally penetrating computers owned by AT&T and the U.S. Department of Defense.

COMPUTER INDUSTRY

INDUSTRY INSIGHT

Donald St. John

Waiting for good dough



Ever felt like you'd closed the barn door after the horse had escaped?

Texas Instruments must.

A couple of weeks ago, the Dallas-based company finally got recognition in Japan of its rights to the integrated circuit, which is a coup that is almost certainly worth billions of dollars in royalties over the 12-year life of the patent.

Sounds great, right? Well, there is a catch. TI has been hanging out to dry waiting for those rights for 29 years. That's 29 years' worth of royalties that it is never going to see, either, because the decision by the Japanese Patent Office is — yep, you guessed it — not retroactive.

Let's put this into a little perspective. TI applied for the patent in February 1960, about two years after the IC first saw the light of day. I don't imagine that President Dwight D. Eisenhower, Sen. John F. Kennedy or oil wildcatter George Bush were aware of that decision. I know for certain that Steve Jobs, celebrating his fifth birthday on Feb. 24, did not hear or care about it; likewise, Bill Gates,

Continued on page 65

Jumbo AT&T jettisons jobs

BY ELISABETH HORWITT
CW STAFF

NEW YORK — Continuing to implement the corporate streamlining strategy it announced approximately a year ago, AT&T recently said that it would be eliminating 8,500 jobs next year, primarily in the long-distance Network Services Division.

The cuts will follow an overall staff reduction that is likely to total 22,000 to 23,000 for this year, according to AT&T spokesman Burke Stinson.

At an analysts' meeting here,

AT&T spokesmen said that the company planned to make the following cuts:

- 6,000 jobs from its Network Services Group.
- 1,400 jobs from Material Management Services, which takes care of functions such as inventory and warehousing.
- 700 technicians from the Business Communications Systems unit, which sells private branch exchange (PBX) systems.
- 463 technicians from General Business Systems, which handles small-business communications products such as key systems.

The cuts should help AT&T regain some of the competitive cost advantage it has been gradually losing to major competitors MCI Communications Corp. and U.S. Sprint Communications Co., according to Greg Sawers, a telecommunications analyst at Sanford C. Bernstein. The Wall Street investment firm has been recommending AT&T stock and is unlikely to change that recommendation based on the latest announcements, which simply restate what AT&T "has been saying all along, couched in more dramatic terms," he added.

"The lion's share of the Net-

work Service cuts" stem from AT&T's accelerated migration from analog to digital networking equipment, Stinson said. The implementation of more sophisticated digital networking frequently means that "one person at a computer terminal can do the job that several people did in other days," allowing AT&T to effectively use fewer people to manage and operate its long-distance network, he added.

"I'd be a fool to deny that the accelerated pace of our technology enhancement has been implemented with an eye toward the competition," Stinson said.

During the first 10 months of this year, AT&T lost 10,000 jobs through attrition and cuts,

Continued on page 65

An interface that will speak your language

BY JEAN S. BOZMAN
CW STAFF

BERKELEY, Calif. — What if you could sit down at your personal computer keyboard and ask your relational database for information in your own words?

The ability to pose questions in standard English rather than standard SQL is the premise behind 5-year-old Natural Language, Inc. (NLI) and its flagship software offering.

"This product can clearly address a huge market of end users," Chief Executive Officer Tania Amochaev said. "Now that there is a lot of data tucked away in large relational databases, the question is how to get

it out. We want to let people communicate with computers the way they communicate with each other."

But NLI, which began selling its interface to end users in 1988, has fewer than 100 sales to its credit. It is living on a \$7.3 million second round of financing raised by Brentwood Associates in Los Angeles, Norwest Venture Capital Management, Inc. in Minneapolis and EG&G Venture Partners of Mountain View, Calif., in March. Initial financing was about \$3 million.

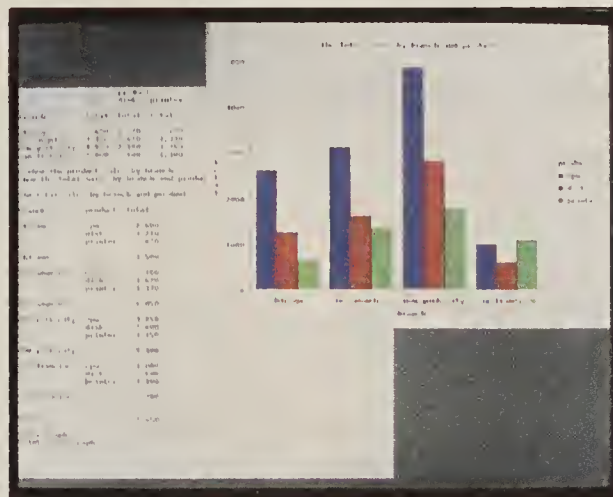
A recent management change brought Amochaev, who was an executive at Comserv Corp., a manufacturing software house in Minneapolis, to the firm.

Amochaev and her company of 55 staffers intend to sell Natural Language as a companion product to major relational DBMSs, including those made by

Oracle Corp., Ingres Corp., Informix Corp. and Sybase, Inc. Those four RDBMS vendors are actively co-marketing the Natural Language interface with their products, Amochaev said. To broaden Natural Language's appeal, company designers plan to extend the interface to IBM's DB2 relational database sometime in 1990, said Amochaev.

NLI's interface works by translating — and, if necessary, correcting — an English-language query so that it can be transformed into SQL statements for DBMS access. "Most SQL tools address the needs of people who are relatively sophisticated in their computer use," said Marketing Vice-President Paul Ricci. "Our

To page 68



Natural Language's new software offering speaks good old English, not SQL

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St. John

CONTINUED FROM PAGE 63

anxiously awaiting his fifth in October, could not have imagined what it would do for him.

You get the point. The average time it takes to handle such an application, according to industry analysts, is five to seven years. That is a 22-year delay; in those 22 years, Japan completed its rise from the wreckage of World War II and postwar U.S. dominance of the world's business and political affairs to forge a hegemony in business that has lately kept America unnerved and uncertain of what to do next.

That dominance was forged largely with the integrated circuit. Japan achieved leadership in the semiconductor market in the early 1980s; they have become a behemoth in the areas of computers, manufacturing systems, robotics, consumer electronics and scores of other industries on the strength of the IC. Now the world's largest producer of ICs and semiconductors, Japanese businesses in that market will account for nearly 40% of the worldwide IC market this year, according to a Paine Webber report.

All the while, and while using the benefits of that technology to the hilt, Japan stalled and stalled and stalled some more in acknowledging that TI, as the in-

ventor of the IC, had a right to share in the windfall it triggered. Deliberate? That's hard to say, but an approval process of more than four times the normal length cannot help but raise a few eyebrows.

When you have a ball game in your rival's stadium, you can expect booing and the occasional cup of beer flung from the stands, but at least you get to play on the same field. Not in this instance, however. And it is hard not to note the irony of TI's taking a \$55 million writedown against earnings this year because of the recent drops in random-access memory chip prices.

However, not all is lost; in fact, much may yet be gained for Texas Instruments. The cash infusion it will receive over the next decade-plus certainly is not going to hurt it and may in fact be more welcome now than it would have been a decade ago, when TI was riding high as both a chip maker and a producer of such electronic gizmos as calculators and watches.

Also, TI itself has acknowledged a greater long-term benefit — the shoring up of the rights to intellectual property. International battles over the rights to software are currently shaping up in Singapore and other ports of call, and this may strengthen developers' hands in such instances.

However, the overriding issue at hand here is fairness — arguably in short supply in this instance. The debates over Japanese strength and how best to counter it tend to include calls for protectionism, tariffs and other measures designed to match Japan's apparent unwillingness to open its markets to American companies. Not all embrace such views, of course. But TI's long battle cannot fail to encourage the widely held opinion that when you look east these days, all you can see is the swishing tail of that horse galloping away at top speed.

St. John is *Computerworld's* chief copy editor.

Taiwanese investors getting Wyse in international expansion effort

BY JAMES DALY
CW STAFF

One of the longest swan songs in the Silicon Valley ended mercifully last week when Wyse Technology, Inc. announced it would be bought by a powerful group of Taiwanese investors for \$156.7 million or \$10 a share.

The long-anticipated buyout of the ailing firm is believed to be the first Taiwanese takeover of a publicly traded U.S. company and represents the increasingly important role Taiwan plays in the computer business.

"It's time for Taiwanese businesses to go international," said Nelson Chang, chairman of the Channel International Corp. investor group, at a midday news conference in San Francisco.

As recently as two years ago, Wyse was a high-flying success story and ranked as one of the leading producers of computer terminals. But when the San Jose, Calif.-based firm entered the personal computer business, it pulled a financial muscle — an injury from which it never recovered. A delayed introduction of a PC based on the Intel Corp. 80386 chip caused dramatic price slashing, quickly chewed up profits and propelled the firm into a prolonged dance of death.

In the quarter ended Sept. 29, Wyse lost \$3.6 million on sales of \$119 million. The firm also posted a net loss for the fiscal year ended March 31 of \$21 million on sales of \$452.3 million.

In addition to the cash offer, Channel International will also assume \$112 million of Wyse's debt.

Wyse officials said that no immediate layoffs would result from the acquisition, although long-term projections could not be made until a complete review of the situation is completed.

Because Wyse's machines are made in Taiwan, analysts see the move as a good opportunity to tighten up the lengthy distribution channel that had stretched the resources of the company. "The [distribution] problems spelled nothing but trouble when they were trying to get a leading-edge product to market," said Benny Lorenzo, an analyst at San Francisco investment firm Volpe, Covington & Welty.

Channel International includes some of the most influential members of Taiwanese society. Chief among these is China Trust Group, a conglomerate of more than 100 companies. That group is head-

ed by C. F. Koo, a member of the Taiwan ruling party's Central Standing Committee, which sets government policy.

Other investors include Grand Pacific Petrochemical Corp., petrochemical firm USI Far East Corp., electronics product maker Mitac Corp. and Taiwan Cement. The Taiwanese government is also involved, in that 20% of Channel International evolves from a fund created by the government to promote industry.

Morris Chang (no relation to Nelson Chang), a former chief executive officer at General Instruments Corp. and senior vice-president at Texas Instruments, Inc., will become Wyse's new chairman and CEO, replacing founder Bernard K. Tse, who will assume the role of vice-chairman.

Wyse was founded in 1981 by Tse and his wife Grace. Analysts warn that recent events could cloud the firm's past history of success, and returning the company to profitability could prove difficult in a business where Wyse has never established strong brand name recognition.

AT&T

CONTINUED FROM PAGE 63

and the company is likely to see another 12,000 to 13,000 employees accept the "pension sweetener offered in October," Stinson said.

Contrary to the popular conception "that all we have done is lop people off the payroll since divestiture," AT&T has actually been adding people to its computer and international networking service divisions, Stinson said.

After "stubbing our toes" upon entering both areas just after divestiture, AT&T now finds itself expanding overseas and "becoming a voice worth listening to, if not a major force [in the computer industry] thanks to Unix," Stinson said.

According to Stinson, AT&T's International Networking Division acquired approximately 2,000 people overseas last fall with the acquisition of UK packet-switching services company Istel, bringing the group's total payroll up to 17,000 or 18,000 people.

The addition of 100 people brings AT&T's computer group up to 9,700 this year, while the Unix software operations group gained 20 people and now totals 372, Stinson added.

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Language

CONTINUED FROM PAGE 63

product interprets the English question you ask and applies the query in context of what you've told it about your application."

Its benefits are immediate, Ricci said in a prepared statement: "The Natural Language interface reduces SQL programming, cuts training costs, gives end users immediate access to time-critical information and is easy to integrate with exist-



Natural Language's Amochaev sees a huge market for her product

ing computer environments."

The product's designers, Jerrold Ginsparg and John Manferdelli, who also founded NLI, developed the natural language interface after working with Unix computers at AT&T's Bell Laboratories. "Refining the meaning attached to queries is something that people are typically

good at doing," Manferdelli said. "And that task of refining the meaning is something that machines are typically bad at doing."

Industry analysts, however, are concerned that the company — which has not yet gone public — may face stiff competition from a number of interfaces that use icons and mice or graphics to access data. In addition, several companies, including AI Corp., Intelligent Business Systems and Symantec Corp., have entered the market with character-based interfaces.

At least in the abstract, the market could accommodate the disparate approaches to easier user access, said David Bayer, an analyst at Montgomery Securities in San Francisco: "SQL is not easy to learn, so there is a need for user-friendly

interfaces. But the front-end market will be a mixed-mode market based on user preferences." Mouse-driven methods of selecting data may prove strong competi-

"SQL IS NOT easy to learn, so there is a need for user-friendly interfaces."

DAVID BAYER
MONTGOMERY SECURITIES

tors for keyboard methods, he said, adding: "The graphical user interface is a very powerful simplifying phenomenon."

NLI software runs on a variety of Unix computers, including those made by Digital Equipment Corp., Hewlett-Packard Co. and Sun Microsystems, Inc., as well as IBM's RT workstations running AIX and Personal System/2s running AIX and Xenix.

The Natural Language interface is priced at \$10,000 to \$60,000, depending on the hardware platform. However, customers are required to buy a development system copy that ranges in price from \$40,000 to \$100,000, since the interface must be tuned to the end user's target DBMS applications. The product's underlying language processor is tuned for each RDBMS it supports, making a connection between the user's meaning and the location of the data required.



(A) WY-3225, 25 MHz 386 as multi-user platform driving (B) WY-60 terminal, (C) WY-150 terminal and (D) WY-370 color terminal. (E) WY-3225 as LAN fileserver with (F) WY-2116 16 MHz 286 with WY-650 VGA color monitor; (G) WY-2112 12.5 MHz 286 with WY-700 hi-res monitor; (H) the Wyse Networker and (I) WY-3216 16 MHz 386 with (J) WY-7190 hi-res 19" monitor.

ACS buys OBS for national reach

DALLAS — Affiliated Computer Systems, Inc. (ACS), the \$130 million data services company, acquired San Francisco-based OBS Companies, Inc. (OBS), a \$25 million computer services and software organization, ACS said earlier this month.

The acquisition will allow ACS to expand into a national data services company, according to OBS President Jeffery Stein.

"We will have data centers in the Midwest and in Southern California by the second quarter of 1990," he said. The centers will handle electronic funds transfer for banks — and support information systems functions and telecommunications for client firms, among other services.

ACS, which manages IS functions for companies like Southland Corp., will now gain access to OBS' 55,000-sq.-ft. data center in Santa Clara, Calif.

OBS will be operated as a wholly owned subsidiary of ACS/Commercial Services, which is another ACS subsidiary.

The OBS organization will continue to be run under the direction of Stein, who originally founded OBS in 1969.

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Apple is first firm to link up with MCC effort

BY JAMES DALY
CW STAFF

AUSTIN, Texas — Apple Computer, Inc. has announced that it will join a pair of major artificial intelligence investigative efforts under way at the Microelectronics and Computer Technology Corp. (MCC) research consortium.

Under terms of the agreement, scientists from Apple will join MCC's Advanced Computing Technology (ACT) program, where they will work with delegates from six other firms in designing computers that process information in a manner that more closely approximates the way hu-

mans think, reason and communicate.

With this move, Apple becomes one of the first firms to participate in MCC on a per-project basis. The consortium announced in August that it would unbundle ACT research projects, thus allowing companies to participate in development areas that fit their individual needs. Formerly, full membership in MCC — which can cost more than \$3 million — was required to participate in any group.

MCC is a cooperative equipped with ideals that are simple but high: to define and initiate major research efforts in the microelectronics and computer fields.

The ACT program allows firms to pare

down frequently overbearing research and development costs while reaping the benefits of advanced technology research. Each member pays between \$150,000 and \$600,000 to participate and is given royalty-free rights to tools created and information garnered in the development process, said MCC spokesman Steve Maysonave.

Apple will also work with Digital Equipment Corp., Bellcore, Control Data Corp., Eastman Kodak Co., Harris Corp. and NCR Corp. on MCC's Large Common Sense Knowledge-Base Construction and Knowledge-Based Natural Language projects.

IN BRIEF

All hands off DEC

No particular reason to fear, said a spokesman, but Digital Equipment Corp. is too savvy to ignore the outside chance that a hungry, aspiring acquirer may prowl around its battered stock. DEC put a poison pill — a shareholder-rights plan aimed at deterring unsolicited takeover attempts — into place last week.

No ifs, ands or putts

As part of its ongoing reorganization, Wang Laboratories, Inc. is in the market for a new finance head to replace Senior Vice-President, Treasurer and Chief Financial Officer Eugene Bullis, who will be leaving in the early days of the new year. Anyone wed to country club living need not apply; Wang last week sold its nine-hole, 120-acre golf club in Groton, Mass., to that town for \$2 million.

Does this make him a data general?

Vienna, Va.-based Quantum Computer Services, Inc., a provider of electronic services to personal computer users, recently elected Alexander M. Haig Jr. to its board of directors. Haig, who served in high offices under Presidents Reagan and Nixon, now heads a Washington, D.C.-based corporate consulting firm specializing in marketing and acquisition strategy.

Convex who?

The title has eluded Alliant on its native soil, but Littleton, Mass.-based Alliant Computer Systems Corp. is the front-runner when it comes to minisupercomputer sales in Japan, according to the Japan Electronic Industry Development Association. An early study of the nascent Japanese minisupercomputer market pegged Alliant as holding a 32% share, placing it in the lead with recently merged Star-dent Computer, Inc. taking second and U.S. market leader Convex Computer Corp. placing third.

Datapoint counterpoint

Communications products vendor Datapoint Corp. fingered customer uncertainty surrounding the recent attempt by a shareholder to unseat Chairman Asher Edelman and his board of directors as a major factor behind the \$13.1 million net loss reported for the firm's first quarter, ended Oct. 28. In addition to the loss, reported on revenue of \$60.2 million, Datapoint announced the hiring of Kidder, Peabody & Co. to help aid it in evaluating "a range of strategic alternatives to maximize shareholder value" — including a possible sale of the firm.



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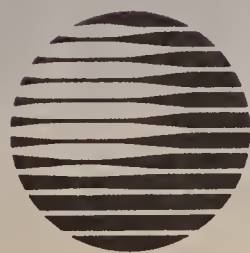


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TRW combines text and graphics on the system's "WYSIWYG" screen, and prints at up to 92 impressions per minute on the 1392 printer. "It gives blacker text images, better definition and crisper line edges," says Cosgrove, "and in direct mail, that's important." For a complete package of information, call 1 800 255-3434, Ext. 551. In Canada, call 1 800 465-6325.

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COMPUTER CAREERS

Cuts spawn internal consulting

Corporate restructurings reinforce the need for flexible IS professionals

BY GARY B. FIEBERT
and JANET TWEED
SPECIAL TO CW

Dozens of major U.S. corporations have undergone restructurings in recent years, eliminating hundreds and in some cases thousands of middle-management positions.

These actions are not motivated solely by cost considerations. The philosophy of participatory management has emerged, prompting companies to cut the distance between top management and workers to bring about better quality, more productivity and, ultimately, greater profits.

One upshot of such developments is that traditional midlevel information systems managers are being replaced by a new breed of project manager. These new managers are charged with accomplishing specific objectives — launching a new product, for example — and with identifying and mobilizing the resources required to get the job done. When they accomplish the task, they move on to another one.

The result is development of a function sometimes called internal consulting. "Our area is staffed with many solo practitioners

who can deal with all aspects of a problem in order to accomplish the job," says Vita Casese, director of Pharmaceutical Systems at Pfizer, Inc. The structures of IS organizations need to be flattened to get things accomplished, she says.

Jim O'Malley, director of MIS for the Port Authority of New York and New Jersey, says IS organizations entail fewer direct reporting lines connecting one position to another. IS people have been freed to move throughout the organization, listen and sell services to the people who can benefit from them.

As corporations have cut staff, IS organizations have borne their share of the downsizing; they must also meet more stringent productivity standards. At the same time, IS units must help shape the new corporation. Information technology is letting companies "rethink" themselves, O'Malley says. IS groups help companies serve customers better by facilitating the removal of management layers and bureaucracy, allowing one person to be responsible for several tasks.

At the Suburban Propane Gas division of Quantum Chemical Corp., for example, a network of 400 computers tied to a database in the company's Whippany, N.J., headquarters helps managers hold together a flattened organization by effectively doubling each manager's span of control, according to Frank Kassel, the division's vice-president of MIS.

All these developments demand a new type of IS professional with a wider range of talents. "You are seeing broader people who are more involved and more integrated into the business," says Ken Horner, director of information technology at the New York office of consulting firm Touche Ross & Co.

"Formerly, there was a need for specialists, but now we need generalists who can handle a variety of technologies and applications," O'Malley says. Casese says she tries to hire "a Renaissance person" — someone who understands business as well as a variety of technologies.

Many IS professionals, especially those whose training was focused on technical skills, are

not prepared to confront the new demands. Companies are looking for managers who have the breadth to understand marketing, sales and customer service.

Other developments reinforce the trend. The integration of personal computers forces IS professionals to work on the us-

trying to compensate for such developments. With its management hierarchy no longer providing as much opportunity as in the past, Pfizer, among others, has established a technical consultancy ladder.

There have been other advances. A senior officer at a lead-

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ers' turf, and users are more and more sophisticated when it comes to computers, says Bob Friedenberg, manager of the decision support group at consulting firm Coopers & Lybrand.

For managers who survive a restructuring, acquiring new responsibilities and gaining more direct access to the top can be challenging, even exhilarating, at least in the short run. But there are trade-offs — harder work, fewer promotions and slower raises.

With fewer layers of management, there are fewer jobs to aspire to; with layoffs becoming increasingly common, there are more people competing for them. The time people spend at a given job level has grown, and salary scales have not caught up with weightier job descriptions.

A few companies have been

ing money center bank says there are many more six-figure incomes in technology development than there were in the past. Opportunities are particularly ripe for people with consulting skills.

The strategy to tighten middle management seems to have paid off; judging by the results to date, companies can survive with fewer people managing them. However, sometimes companies restructure without an organizational plan; cuts are made and organizations accommodate them. Managers should investigate whether these new ad hoc structures are optimal, or even viable, over the longer term.

Fiebert is president and Tweed is a principal at Gilbert Tweed Associates, Inc., a management consulting and executive search firm in New York.

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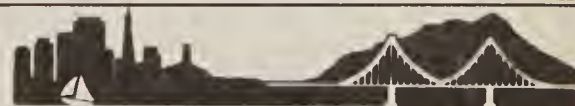
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Covington is located in the scenic Alleghany Highlands of Western Virginia and offers a relaxed and friendly environment. Outdoor activities abound, including camping, hiking, golf, hunting, fishing and snow skiing opportunities.

Send resume, including salary history, to:

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Westvaco Corporation
Covington, VA 24426

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Programmer Analyst

Yale New Haven Hospital, a nationally recognized leader in health care has an outstanding opportunity for a Programmer Analyst with a Bachelor's degree or equivalent experience. You must have exceptional communication skills and be a creative problem-solver. This opportunity is within our state-of-the-art M.I.S. Department, where we are implementing the hospital's long-range information systems development plan, to enhance and expand our IBM 3090 MVS/XA environment.

You will develop and install new systems while maintaining and enhancing existing systems. You should have:

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In addition to being challenged by our commitment to development, you will enjoy a team-spirited atmosphere and an excellent compensation package. Qualified professionals are invited to forward resume, including salary expectations to: Rocco Lapenta, Yale New Haven Hospital, 20 York Street, New Haven, CT 06504. Minority candidates are encouraged to apply. No agencies, referrals, or calls please! An EOE/AA/M/F/H/V

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The Artificial Intelligence (AI) laboratory in the Department of Statistics and Computer Science is seeking applications for a research associate beginning January 1, 1990. An M.S. in Computer Science with a background in AI and Chemistry or Chemical Engineering and experience in knowledge based systems development, Chemical process simulation, rule based programming, interactive computer graphics and operating system management (VMS and UNIX) are required. The salary will be \$36,000/12 months.

West Virginia University (WVU) is a land grant university of approximately 20,000 students located in Morgantown, WV which is 75 miles South of Pittsburgh and 200 miles West of Washington, DC.

Please send resume, names of three references, and transcripts to: Dr. Sumitra M. Reddy, Assistant Professor of Computer Science, Department of Statistics and Computer Science, 215 Knapp Hall, WVU, Morgantown, WV 26506.

Initial consideration will be given to applications received prior to January 15, 1990. If the position is not filled, applications will be accepted until a suitable applicant is found. An equal opportunity/affirmative action employer. Women and minorities are encouraged to apply.

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BOSTON: 375 Cochituate Road, Box 9171, Framingham, MA 01701-9171, Nancy Percival, Regional Manager; 800-343-6474. (in Massachusetts, 508-879-0700); Andrew Rowe, Account Executive.

NEW YORK: Paramus Plaza I, 140 Route 17 North, Paramus, NJ 07652; Warren Kolber, Regional Manager, 201-967-1350; Jay Novack, Account Executive 800-343-6474.

WASHINGTON, D.C.: 8304 Professional Hill Drive, Fairfax, VA 22031; Katie Kress, Regional Manager, 703-573-4115; Pauline Smith, Account Executive 800-343-6474.

CHICAGO: 10400 West Higgins Road, Suite 300, Rosemont, IL 60018; Patricia Powers, Regional Manager, 312-827-4433; Ellen Casey, Account Executive 800-343-6474.

LOS ANGELES: 18004 Sky Park Circle, Suite 100, Irvine, CA 92714; Barbara Murphy, Regional Manager, 714-250-0164; Chris Glenn, Account Executive, 800-343-6474.

SAN FRANCISCO: 18008 Sky Park Circle, Suite 145, Irvine, CA 92714; Barbara Murphy, Regional Manager, 714-250-0164; Chris Glenn, Account Executive, 800-343-6474.

Nursing Care facility in South Western Ohio needs a Senior Computer Programmer-Analyst. Job duties: (1) Development of software programs for Home Health Care Scheduling System, applying the knowledge of computer capabilities, mathematics and logic employed by computers. (2) Analysis of Data Base charts and diagrams of the business problems to be programmed. (3) Assist in the design and development of scheduling system. (4) Responsible for the end-user training and support, preparation for updating of end-user training manual. (5) Directs and assists in the training of Computer Programmer I. Requirements: A Masters of Science in Mathematics with an Emphasis in Computer Science. One course in File Design and Analysis. Two courses in Design and Analysis of Algorithms. One year experience as a Programmer, Information Systems. Experience must be in scheduling programming in health care industry. Send resume (NO CALLS) to C. Bussard, JO# 1099663, Ohio Bureau of Employment Services, P.O. Box 1618, Columbus OH 43216

Systems Analyst for NE Ohio Software Development Company. Analyze & assess information systems needs of clients, evaluate problem, design & develop a model system, & implement computer system as oriented to specific customer specification & needs; utilize mathematical programming, stochastic analysis, database management & computerized equipment; to build decision support system for management oriented problems utilizing computer simulation, system dynamic modeling and Leontif models on high speed microcomputers. No exp. required in above duties but applicants will qualify with a Master of Science Degree with a major in Systems Analysis & 3 courses in Engineering Administration, 1 course in Stochastic Models, and 1 course in Management of Information Resources. 40 hrs/wk. M-F 8AM-5PM. Salary of \$26,600/yr. Qualified applicants send resumes (NO CALLS) immediately to S. Holton, JO #1084492, Ohio Bureau of Employment Services, P.O. Box 1618, Columbus, OH 43216.

Electrical/Test Engineer to develop equipment and processes to measure manufactured printed circuit boards and their individual layers. Compliance to specification in the areas of image processing, robotics, electrical parametric test, simulation, instrumentation, automation and the design of controls associated with required by these designs. The controllers would include electrical, software and hardware design. Application of these skills would be in support of mature volume manufacturing processes/operations and in the development of manufacturing process that presently do not exist. Requirements are a Master's of Science in Electrical Engineering with specialization in robotics, automatic controls and image processing. Background in instrumentation, measurement techniques and digital circuit design is required. No experience required. 40/hr week, 8:00-5:00 P.M. Salary: \$35,006.00 to \$38,006.00 per year. If you are interested in and qualified for the above position, please forward your resume to: Employment Security Commission, Case #SC0928679, 706 Pendleton St., P.O. Box 328, Greenville, S.C. 29602.

Project Engineer (Artificial Intelligence); 40 hrs/wk; 7:30am - 4pm; \$34,000/yr; overtime as needed, compensated at \$17.50/hr. Job requires Masters degree in Electrical Engineering. Job also reqs.: 1) graduate level research in artificial intelligence as evidenced by 2 published papers OR Masters thesis; 2) 1 grad course in artificial intelligence; 3) 1 grad course in computer architecture; & 4) 1 grad course in computer structures. Job duties: develop Real-time control software & communications protocols using artificial intelligence methods. Interface newly-developed software with existing hardware. Qualified applicants should send resume & verification of reqs. to: 7310 Woodward, Rm 415, Detroit, MI 48202. Ref#84189. Employer paid ad.

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If you have experience in one of the above, and would like to work and live in the Rockies, please call, fax or send resume immediately to: Stephen J. Kukoy, President, Abacus Consultants, Inc., 1777 South Harrison Street, Suite 404, Denver, CO 80210. (303) 759-5064, FAX (303) 759-9846.

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SOFTWARE ENGINEER (IMAGE PROCESSING) - Partake in the development of image processing software controlling colorization equipment. Require Master's in Electrical Engineering and 5 years experience including Digital Signal Processing, Image Processing (edge detection and gray scale correlation), Pattern Recognition (motion analysis) and Information Theory. Salary: \$48,000 per annum. Job Location: Marina Del Rey, CA. Resume to: Human Resources, Color Systems Technology, 4553 Glencoe Avenue, Ste. 100, Marina Del Rey, CA 90292.

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Candidate must have BS degree in CS or related field, five year related experience with RDBMS Languages in a VAX/VMS environment, and at least two year experience as a DBA. Knowledge of INGRES RDBMS required.

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Candidate must have BS degree in CS or related field, three years experience with VAX/VMS and several years experience in system management of VAXes, VAX Clusters, hardware configuration, DECnet, Ethernet, LANs and layered product software. Additional experience in PCs, FORTRAN, INGRES RDBMS a plus. Send resume to: Personnel, P.O. Box 191 NWS, Yorktown, VA 23691.

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EOE M/F/H.

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Require 2-4 year degree, Computer Science preferred, and/or equivalent experience. Need minimum of 4+ years database design with at least 1 year relational database experience, preferably with ORACLE RDMS Version 5.1/6.0. Thorough knowledge of SQL and relational database theory beneficial. Familiarity with C.A.S.E. tools a plus.

Should be skilled in analytical problem solving and efficiency techniques. Must be good organizer and planner, with the ability to communicate effectively with both technical and non-technical personnel.

INFORMATION SYSTEMS DEVELOPERS

Seeking individuals with at least 2 years of experience in Applications Development on Honeywell Bull Information Systems GCOS7 platforms.

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Excellent benefits. Relocation assistance available.

Send resume. Please indicate salary history and requirements in order to be considered.

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EOE

SYSTEMS ANALYST I

This position will provide a complete range of computer work station/peripheral equipment to mainframe services in a complex, multi-vendor environment: specifying hardware connections between DEC/VMS and IBM/VM work stations via existing networks to a VAX/IBM/Am-dahl central computing facility utilizing a UNIX operating system; modifying existing or developing new software using Fortran and C languages to enable data transmission for work station users resolving any hardware or software problems and maintaining required system documentation; training work station users in all aspects of system/equipment operation.

As a minimum, applicants must hold a Bachelor's degree in Computer Engineering, have one year of experience as a computing consultant/trainer during which they trained others in the operation of diverse computer systems and display strong verbal and written communication abilities in English.

The position is of 40 hours per week (8:30 a.m. to 5:00 p.m.) and carries a salary of \$30,500 per annum.

Applicants should direct their resumes to: Illinois Department of Employment Security, 401 S. State Street - 3 South, Chicago, IL 60605, Attn: Marie Ninneman, Reference No. 9767-N. AN EMPLOYER PAID AD.

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- Telon
- APS
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- Nomad
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Phoenix, AZ 85028
Office (602) 953-6639
Fax (602) 953-7739

For Southern California:
Computer Horizons Corp.
Attn: Richard Raubach
225 West Broadway,
Suite 475
Glendale, CA 91204
Office (818) 502-1263
Fax (818) 502-1879

For Bay Area:
Computer Horizons Corp.
Attn: Melissa Pranger
350 Sansome Street, Suite 1010
San Francisco, CA 94104
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Work Location: Las Vegas, Mercury and Tonopah, Nevada

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All the information you need is right here. Just call Lisa McGrath at 800-343-6474 (in MA, 508-879-0700). Or, if you want, you can send us the form below via mail or to our FAX machine. You can reach our FAX at ext. 739 or 740 at either of the above numbers.

The following information will help you determine the size ad you'd like to run and when you'd like to run it.

CLOSING DATES: To reserve space, you need to call us by 5PM (all continental U.S. time zones), 6 days prior to the Monday issue date. We need your ad materials (camera-ready mechanical or copy for pub-set ad) by 5PM, 5 days prior to the weekly issue.

AD COPY: We'll typeset your ad at no extra charge. You can give us copy via phone, U.S. mail, or FAX. To typeset an ad for you, we need clean, typewritten copy. Figure about 30 words to the column inch, not including headlines. (There are seven columns on each page.)

LOGOS AND SPECIAL ARTWORK: Any logos or special artwork should be enclosed with your ad copy. For best reproduction, please send us either a stat of your logo or a clean sample on white bond paper.

COLUMN WIDTHS AND MINIMUM DEPTHS: Your ad can be one of seven different widths. There is a minimum depth requirement for each width. You can also run larger ads in half-inch increments. The chart below can serve as a reference.

NUMBER OF COLUMNS	WIDTH	MINIMUM DEPTH
1 column	1-1/4"	2"
2 columns	2-5/8"	2"
3 columns	4-1/16"	3"
4 columns	5-9/16"	4"
5 columns	6-15/16"	5"
6 columns	8-3/8"	6"
7 columns	9-3/4"	7"

RATES: Your rate will depend on the size of your ad and whether you choose to run regionally or nationally. The national rate is \$14.85 per line or \$178.20 per column inch. The regional rate (Eastern, Midwestern or Western editions) is \$10.80 per line or \$129.60 per column inch. You can run your ad in any two regions for \$13.50 per

line or \$189.00 per column inch. In all cases, you can earn volume discounts.

The minimum ad size is two column inches (1-1/4" wide by 2" deep) and costs \$415.80 if run nationally. A sample of this size appears below. You can run larger ads in half-inch increments at \$103.95 per half inch. Box numbers are available and cost \$25 per insertion (\$50 if foreign).

Programmer Analyst

This is a sample ad for Computerworld's Computer Careers section. It will help you decide what size ad you'd like to run. Remember that you can run your ad either regionally or nationally in our recruitment section and that the minimum ad size is one column (1 4/16 inches wide) by two inches deep (like this sample). This ad would cost \$415.80 in our national edition, \$302.40 in the Eastern, Midwestern, or Western edition, and \$378.00 in two regions; volume discounts apply.

SAMPLE AD SIZES AND PRICES: To assist you in planning your recruitment advertising, the following shows common ad sizes and their respective costs.

	One Region (East, Midwest or West)	Two Regions (East/West East/Midwest, Midwest/West)	National Edition
1 column x 2"	\$ 302.40	\$ 378.00	\$ 415.80
2 column x 2"	\$ 604.80	\$ 756.00	\$ 831.60
3 column x 3"	\$1,360.80	\$1,701.00	\$1,871.10
4 column x 5"	\$3,024.00	\$3,780.00	\$4,158.00
5 column x 7"	\$5,292.00	\$6,615.00	\$7,276.50

PAYMENT: If you're a first-time advertiser or if you haven't established an account with us, we need your payment in advance (or with your ad) or a purchase order number. Once you have established an account with us, we'll bill you for any ads you run as long as your payment record is good.

COMPUTER CAREERS NETWORK BUYS: You can take advantage of special rates that let you run your ad in *Computerworld* and *Computerworld's* sister newspapers at special rates. Choose from *Computerworld Focus on Integration*, *Network World*, *InfoWorld*, *Digital News and Federal Computer Week*. Call for details.

Computerworld Recruitment Advertising Order Form

Ad Size: _____ columns wide by _____ inches deep

Issue Date(s): _____

Name: _____

Company: _____

Address: _____

Telephone: _____

Region: ☐ East ☐ Midwest ☐ West **National:** ☐
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Computerworld Recruitment Advertising Works.

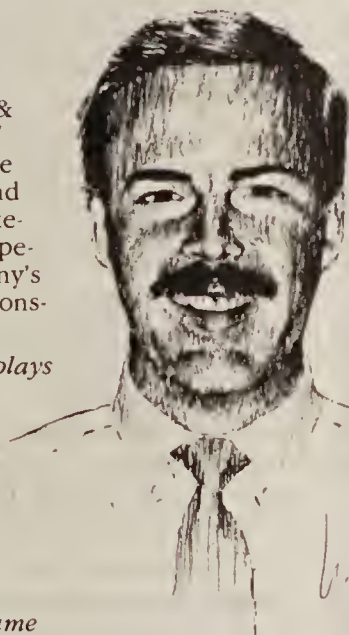
“We’ll be running a regular recruitment advertising schedule in Computerworld to get the results we need.”

— Steven Tully
President
Brannon & Tully, Inc.

A custom software development company in Norcross, GA, Brannon & Tully, Inc. provides contract programming/consulting services to a diverse client base of Fortune 500 companies, utilities, and communications companies. President Steven Tully knows that building a staff of experienced professionals is key to the company's ongoing success in developing solutions-based software for specific applications.

“Because our recruitment advertising plays a vital role in finding the seasoned professionals Brannon & Tully needs, we have to expect one thing. Results. That’s why Computerworld is the only trade publication we use for recruitment advertising.

“Of the over 50 professionals we hired in the past 18 months, over one-third came from Computerworld’s pool of qualified readers. At our present growth rate, we’re expecting to double our size in the next 18 months. That means we’ll be looking to augment our staff with more and more industry,



applications, software, and programming experts to meet the growing demand for greater project diversification.

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A cost-benefit balancing act

To measure a system's potential, weigh all cost and qualitative concerns

BY MICHAEL ERBSCHLOE
SPECIAL TO CW

To get the most out of a cost-benefit analysis for a new information system, you need to balance numerical data on costs with qualitative considerations. The reason is that a system that appears to be inexpensive will not necessarily remain so in the future. If, for example, a computer manufacturer goes out of business or discontinues a platform, you will eventually bear the cost of converting programs and databases.

Calculating the initial cost of a system is relatively simple once you have a framework with which to collect data and make projections. However, it is important to weigh both initial expenses and costs that will come up during the system's life cycle.

There are a number of key cost elements to consider. They include equipment, maintenance, facilities, operating systems, communications, applications, personnel and conversions. Vendors can provide you with information on prices for

equipment, operating systems, maintenance and software. However, if you have not done business with a particular vendor before, you will want to talk to other customers about the reliability of information you can obtain from it. References to customers provided by vendors can be helpful if the customers are using their systems in settings similar to your environment.

Getting real-life information directly from other users can be difficult if they consider your company a competitor.

You need to look elsewhere for objective data regarding personnel and other areas. Information on comparative operating expenses for computer systems is available from a number of major consulting and specialized publishing firms. The data includes benchmark tests as well as analyses of personnel requirements. Be advised, however, that it can be expensive. You can pay hundreds, if not thousands, of dollars for data reliable enough to use in a thorough cost-benefit analysis.

Finally, your own IS staff can be an excellent source of intelligence. If your people have good networks of peers — perhaps

developed through professional organizations or other affiliations — they may be able to get opinions and information about the experiences of other companies for the price of a dinner.

A more difficult piece of data to construct is the estimated

A MORE DIFFICULT piece of data to construct is the estimated cost of getting out of your current system.

cost of getting out of your current system. This estimate can be particularly important now with the demise of proprietary operating systems appearing to be close at hand.

Once your numerical data is collected and your cost estimates are constructed, you need to pursue qualitative considerations. Formulating a sound qualitative analysis can be more difficult than collecting and analyzing numbers, given the role of such human factors as organization structure, decision-making processes and politics.

Some of the specific considerations are obvious but very often ignored. These issues include compatibility, networking capabilities and limitations, portabil-

ity or availability of applications and conformance with the corporate IS structure. One of the most frequently ignored factors is retraining IS staff members and end users on the attributes and functionality of new systems. If an alternative system does not meet your criteria in these areas, you may ultimately find that the cost of keeping it, and of getting rid of it, will increase. For example, one system may appear less expensive than

Meanwhile, the ability of the IS group to guide the users can be undermined by a lack of funds to conduct a cost-benefit analysis. If your company lacks a strategic direction for computing, all the players are further handicapped.

If you can conduct a well-balanced cost-benefit analysis, your company can save thousands of dollars in both acquiring and disposing of systems. These savings can easily outweigh the cost of conducting the analysis.

Another benefit of the cost-benefit analysis is introducing rationality and structure to the decision-making process. If you are using these techniques for the first time in a politically turbulent setting, be warned that not all of the people you deal with will welcome rationality. I find this particularly true of empire builders and egotists.

Erbschloe is executive editor at Computer Economics, Inc. in Carlsbad, Calif.



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The BoCoEx index on used computers

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	Closing price	Recent high	Recent low
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XT Model 086	\$950	\$1,100	\$700
XT Model 089	\$1,025	\$1,400	\$800
AT Model 099	\$1,450	\$1,600	\$1,300
AT Model 239	\$1,825	\$2,000	\$1,700
AT Model 339	\$1,825	\$2,000	\$1,700
PS/2 Model 50	\$1,675	\$1,900	\$1,500
PS/2 Model 60	\$2,700	\$3,100	\$2,500
Compaq Portable I	\$645	\$750	\$550
Portable II	\$1,625	\$1,725	\$1,550
Portable III	\$2,625	\$2,875	\$2,100
Portable 286	\$1,900	\$2,000	\$1,600
Plus	\$750	\$950	\$675
Deskpro 286	\$1,675	\$1,975	\$1,600
Deskpro 386	\$2,500	\$2,900	\$2,500
Apple Macintosh 512	\$675	\$900	\$550
512E	\$750	\$890	\$650
Plus	\$950	\$1,050	\$900
II	\$3,750	\$4,200	\$3,620
Toshiba T-1600	\$3,025	\$3,200	\$2,750
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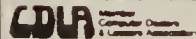


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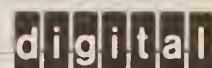
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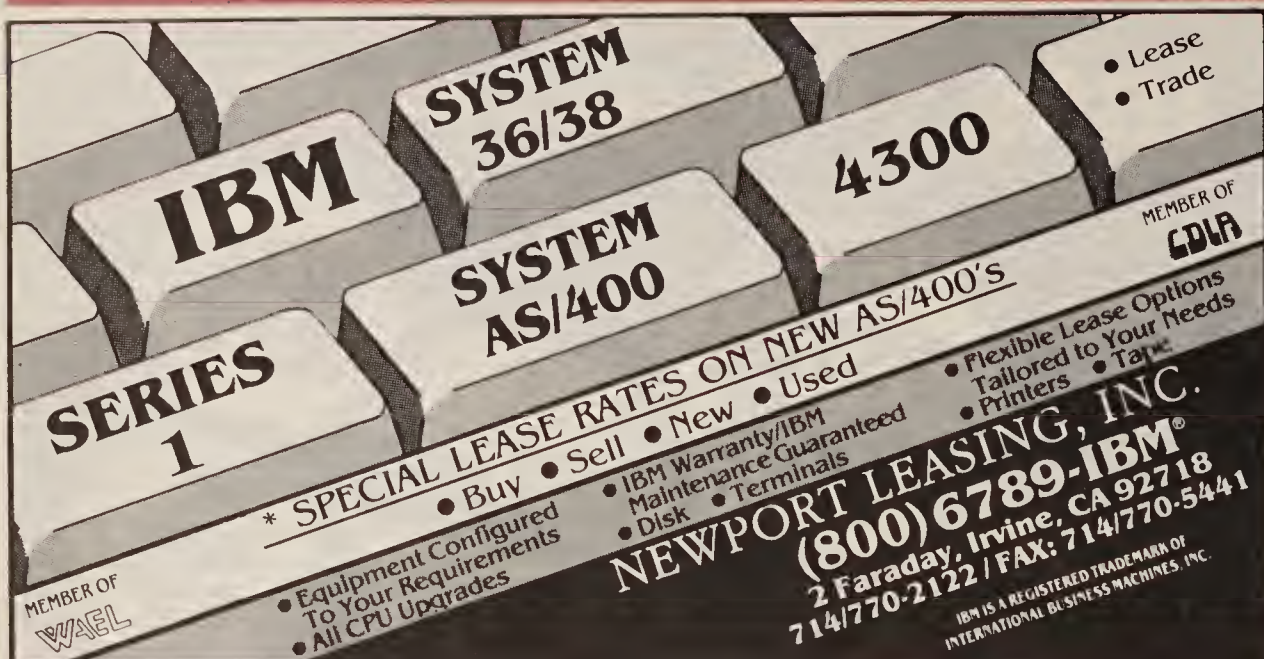
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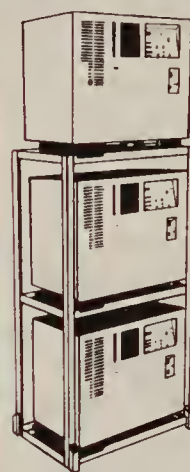
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Pushing down decision-making

Organizational flattening calls for upgrading the skills of IS specialists

BY STEVE DEVAUX
and SHIRLEY MILGROM
SPECIAL TO CW

Last year in the *Harvard Business Review*, management guru Peter Drucker described a new type of organization emerging in the U.S., one with drastically fewer levels of management and specialists who direct their own work through organized feedback from colleagues, customers and headquarters.

Why is this development unfolding now? Because the new imperative is speed — the speed with which a new product or system can be developed, manufactured and brought to market. Decisions can no longer be escalated through the corporate hierarchy and passed back down for implementation.

What are the implications for training? The most important one is that responsibility will increasingly rest on the shoulders of the frontline specialists who will make important and difficult decisions supported by constant

access to an up-to-date "information base." These specialists will need to know how to analyze market data and cost trade-offs, when to resist "creeping elegance" and when to pass on a decision that is beyond their expertise.

The specialist charged with developing one part of a large product is expected to meet quality specifications while staying on budget and on schedule. But what if he sees a way of finishing ahead of schedule by overspending by 1%? Today, he would probably select a prudent course of action by staying with the original plan or passing his suggestion to a superior and waiting for a decision, which may come too late.

Access to market data is not a sufficient solution to this problem. Decision-making specialists must be trained to analyze the data and foresee the possible consequences of decisions throughout the company. They must know they can justify

the added expense to senior management and conduct this analysis, justification and reporting quickly.

The development of prototypes is always threatened by the desire to make a product as wonderful as possible. This syndrome of creeping elegance is even more perilous when the product is mass-produced: \$10 in a prototype can turn into \$100 in manufacturing.

Should a specialist always resist the temptation to improve specifications? Absolutely not. A

small improvement could add tremendously to the success of the product. What is the answer? The frontline specialist who first thinks of the enhancement must understand what effect his brain-

child is going to have on the final product. He needs to have the data to make an informed decision, know how to interpret it and how to pass information about the changes on to the other parts of the company.



If the specialist is given more authority, he must also know just where that authority ends. What if a task goes 10% over budget or falls 10% behind schedule? Is that when management steps in? Or is it when changes in the marketplace require either moving up a deadline or scrapping the whole project?

However it is defined, it is important for management to build an "escalation index" that helps specialists decide whether to act on their own or invoke management's involvement in a decision. It must be fixed, known and accessible to both management and specialists.

Once specialists have been empowered to make decisions about project specifications and schedules, they will need an understanding of project management to play out various scenarios. When an escalation index is established, they need to provide upper management with concise and informative status reports. Moreover, they need to do all of this without losing their status as specialists. Their analysis, decision-making and reporting must be quick and efficient.

These requirements lead to a short but weighty list of subjects in which frontline specialists need training — database querying, marketing and competitive

analysis, project management, production of high-impact reports and assertiveness in making and escalating decisions.

The list for senior managers is shorter but more challenging. They must learn to delegate authority and understand why they should invest in training.

Some of the training requirements fall into the category of product training and can be met through classes or computer-based training. Others present the more challenging mission of bringing about the cultural changes demanded by the new corporate structure.

Simulations that bring together frontline and senior managers can be valuable in implementing cultural shifts. It is not enough to know what decisions to make; players at all levels should practice them together. These exercises should be specific to a company's situation and teach three types of skills: analysis of data, decision-making and communication techniques.

This training investment will not necessarily be cheap, but its rewards can be significant.

Devaux is a training services manager and Milgrom is a manager of educational services and administration at Project Software Development, Inc. in Cambridge, Mass.

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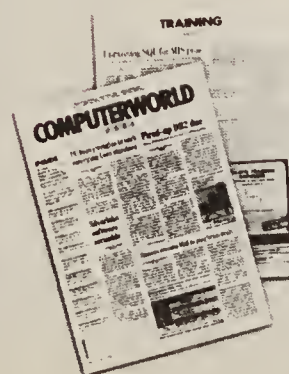
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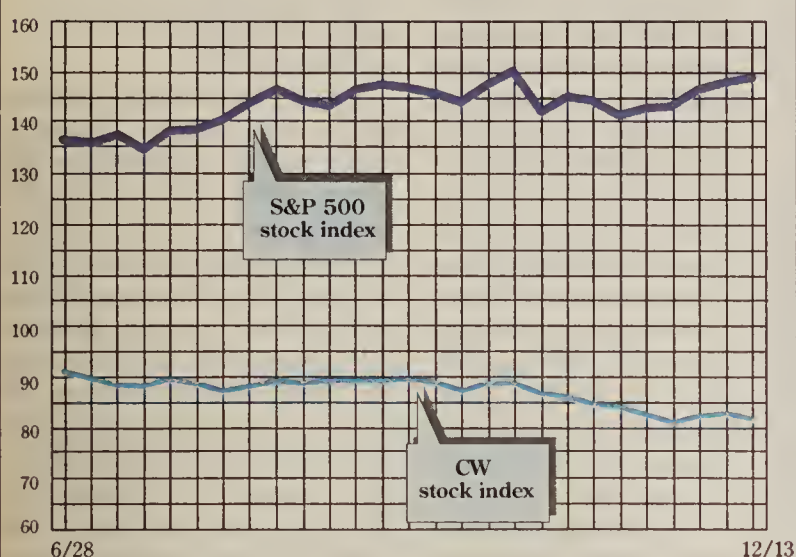
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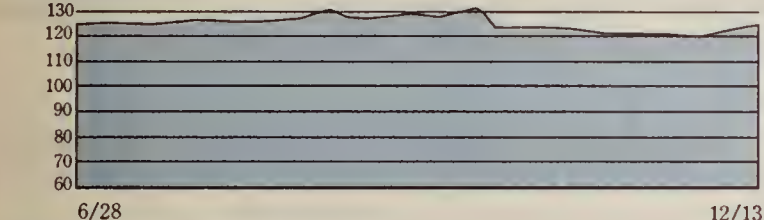
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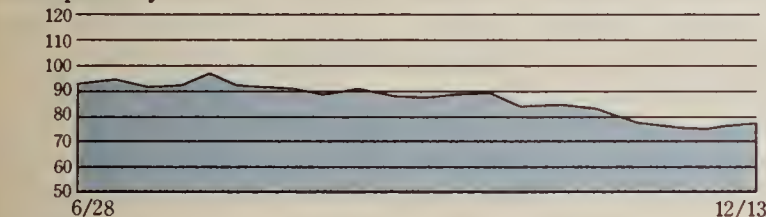


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Computer Systems	76.5	77.2
Software & DP Services	118.0	116.8
Semiconductors	50.8	50.6
Peripherals & Subsystems	71.1	68.9
Leasing Companies	101.0	94.0
Composite Index	82.9	81.6
S&P 500 Index	147.4	148.3

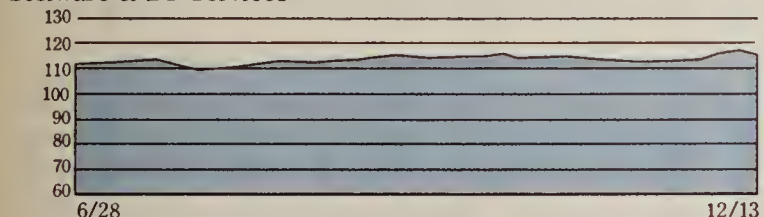
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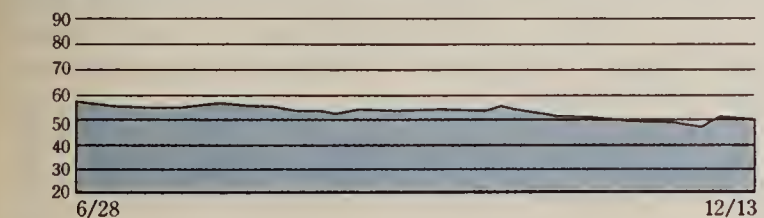
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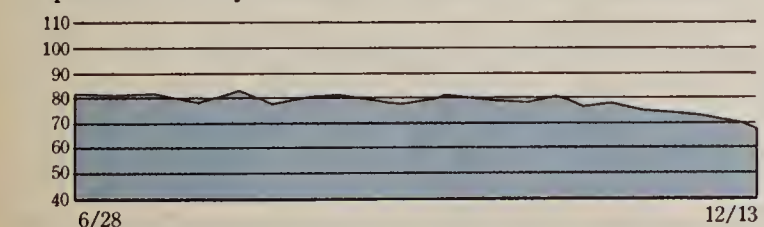
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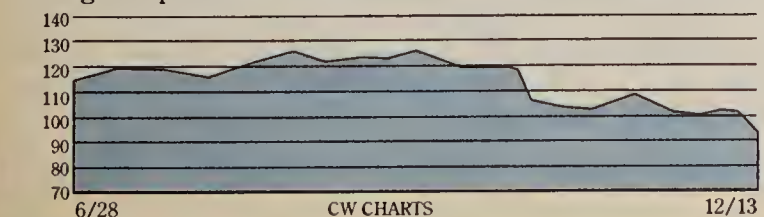
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N	AMERICAN INFO TECHS CORP	65	47	64.75	2.5	4.0
N	ANDREW CORP	26	18	25.75	0.3	1.0
N	ARTEL COMM CORP	9	2	6.625	-0.4	-5.4
N	AT&T	47	28	46.625	3.0	6.9
N	AVANTEK INC	7	4	3.875	-0.1	-3.1
N	AYOIN CORP	21	14	16.875	-0.4	-2.2
N	BELL ATLANTIC CORP	112	69	111.5	5.8	5.4
N	BELLSOUTH CORP	57	39	56.5	2.8	5.1
N	COMPRESSION LABS INC	11	3	7.625	-0.6	-7.6
N	CONTEL CORP	37	19	33.875	-0.5	-1.5
N	DATA SWITCH CORP	6	2	3.25	-0.1	-3.7
N	DIGITAL COMM ASSOC	26	17	19.625	0.8	4.0
N	DYNATECH CORP	21	16	16.75	-0.3	-1.5
N	FIBRONICS INTNL INC	7	4	5.625	-0.9	-13.5
N	GANDALF TECHNOLOGIES	7	4	4.625	-0.6	-11.9
N	GENERAL DATACOMM INDS	7	4	4.625	0.3	5.7
N	GTE CORP	70	43	70	1.5	2.2
N	INFOTRON SYS CORP	13	8	8.5	0.0	0.0
N	ITT CORP	65	50	61.125	0.5	0.8
N	MA COM INC	9	5	5	-0.1	-2.4
N	MCI COMMUNICATIONS CORP	49	22	44.25	1.0	2.3
N	NETWORK EQUIP TECH INC	28	16	26	-0.3	-1.0
N	NETWORK SYS CORP	11	7	8.25	0.5	6.5
N	NORTHERN TELECOM LTD	24	14	24	1.9	8.5
N	NOVELL INC	38	24	29.375	1.1	4.0
N	NYNEX CORP	88	65	87.875	2.8	3.2
N	PACIFIC TELESIS GROUP	51	30	50.5	2.8	5.8
A	PENRIL CORP	9	3	7.125	0.0	0.0
N	SCIENTIFIC ATLANTA INC	25	13	25	0.5	2.0
N	SOUTHWESTERN BELL CORP	60	39	59.875	2.4	4.1
N	3 COM CORP	29	10	13.375	0.0	0.0
N	U S WEST INC	77	57	76.375	3.4	4.6

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Q	ALPHA MICROSYSTEMS	8	4	4.375	-0.1	-2.8
Q	ALTOS COMPUTER SYS	9	6	7.375	0.3	3.5
A	AMDAHL CORP	23	11	13.875	0.5	3.7
Q	APPLE COMPUTER INC	50	34	36	-6.8	-15.8
N	BOLT BERANEK & NEWMAN	13	6	6.25	-0.3	-3.8
N	COMPAQ COMPUTER CORP	113	56	80.25	-9.0	-10.1
N	COMMODORE INTNL	20	7	10.625	0.6	6.3
N	COMPUTER AUTOMATION INC	7	2	3.75	1.4	57.9
N	CONTROL DATA CORP	24	17	18.125	0.5	2.8
N	CRAY RESH INC	66	31	38.75	0.6	1.6
N	DAISY SYS CORP	7	0	1.063	0.5	88.8
N	DATA GEN CORP	20	12	12.75	0.0	0.0
N	DATAPoint CORP	6	3	3.875	-0.4	-8.8
N	DELL COMPUTER CORP	11	5	5.75	-0.1	-2.1
N	DIGITAL EQUIP CORP	122	81	82.625	-4.1	-4.8
N	FLOATING POINT SYS INC	4	1	1.625	0.1	8.3
N	HARRIS CORP	40	26	34.625	0.8	2.2
N	HEWLETT PACKARD CO	62	40	45.375	-0.5	-1.1
N	HONEYWELL INC	92	57	84.625	2.6	3.2
N	IBM	131	96	95.875	-2.8	-2.8
Q	INFORMATION INTL INC	16	12	12.25	0.0	0.0
Q	IPL SYS INC	9	4	6.625	-0.3	-3.6
N	MAI BASIC FOUR INC	11	3	3.25	-0.1	-3.7
N	MATSUSHITA ELEC INOL LTD	204	154	164.5	1.8	1.1
N	MENTOR GRAPHICS CORP	22	13	14.125	-3.3	-18.7
N	NBI INC	3	0	0.469	0.0	-6.2
N	NCR CORP	67	53	60	-1.4	-2.2
N	PRIME COMPUTER INC	21	6	6.5	-0.1	-1.9
N	PYRAMID TECHNOLOGY	20	9	16.5	-1.0	-5.7
Q	SEQUENT COMP SYS INC	21	9	17.75	-2.3	-11.3
Q	SHAREBASE CORP	4	0	0.25	0.0	0.0
Q	SILICON GRAPHICS CORP	27	14	25	-0.5	-2.0
Q	STRATUS COMPUTER	35	21	21	-0.6	-2.9
Q	SUN MICROSYSTEM INC	23	13	16.75	0.1	0.8
Q	SYMBOLICS INC	3	1	1.5	-0.1	-4.0
N	TANDEM COMPUTERS INC	26	15	22.875	-0.3	-1.1
N	TANCOY CORP	49	38	39.375	-2.0	-4.8
N	ULTIMATE CORP	12	7	9	-0.8	-7.7
N	UNISYS CORP	31	12	14.375	0.1	0.9
A	WANG LABS INC	11	5	5	-0.3	-4.8

Software & DP Services

Q	ADOBE SYS INC	30	14	18.25	-1.5	-7.6
N	AMERICAN MGMT SYS INC	19	11	12.625	-0.4	-2.9
Q	AMERICAN SOFTWARE INC	23	10	21.875	0.3	1.2
N	ANACOMP INC	9	4	4.375	-0.1	-2.8
N	ANALYSTS INTL CORP	20	8	17.75	0.0	0.0
Q	ASHTON TATE	24	9	10.625	-0.1	-1.2
Q	ASK COMPUTER SYS INC	18	7	8.75	-0.3	-2.8
N	AUTO DATA PROCESSING	51	36	45.75	-1.8	-3.7
N	AUTOODESK INC	44	27	35.125	-0.9	-2.4
N	BMC SOFTWARE INC	30	12	28	0.4	1.4
N	BUSINESSLAND INC	15	9	9.625	0.1	1.3
N	COGNOS INC	9	4	4.75	0.0	0.0
N	COMPUTER ASSOC INTL INC	22	11	12.375	-0.4	-2.9
N	COMPUTER HORIZONS CORP	11	7	8.5	0.0	0.0
N	COMPUTER SCIENCES CORP	57	46	56.625	1.4	2.5
N	COMPUTER TASK GROUP INC	16	10	10	-0.3	-2.4
N	COMSHARE INC	42	20	35.25	-0.4	-1.1
N	CORPORATE SOFTWARE	16	9	10.5	0.4	3.7
N	GENERAL MTRS (CLS E)	58	42	54.75	-0.1	-0.2
Q	HOGAN SYS INC	7	4	4.875	-0.1	-2.5
Q	INFORMIX CORP	15	8	14.125	0.3	1.8
Q	INTELLICORP INC	6	3	4.75	0.0	0.0
Q	LEGENT CORP	32	20	27.25	-0.3	-0.9
Q	LOTUS DEV CORP	34	18	26	-3.8	-12.6
Q	MANAGEMENT SCIAMER	19	7	18.25	0.0	0.0
Q	MICROSOFT CORP	89	46	80	-5.3	-6.2
Q	NATIONAL DATA CORP	35	22	33.5	-0.5	-1.5
N	ON LINE SOFTWARE INTL INC	10	5	9.125	0.1	1.4
N	ORACLE SYS CORP	26	9	22.375	-2.1	-8.7
N	PANSONIC SYS INC	18	12	16	-0.3	-1.5
Q	PHOENIX TECHNOLOGIES INC	19	3	4.25	-0.4	-8.1
Q	POLICY MGMT SYS CORP	38	22	35.75	0.0	0.0
Q	PROGRAMMING & SYS INC	22	16	21	-0.5	-2.3
Q	RELATIONAL TECH INC	16	5	7	0.3	3.7
N	REYNOLDS & REYNOLDS CO	34	23	25.5	-1.5	-5.6
N	SAGE SOFTWARE INC	11	7	9.625	0.1	1.3
Q	SEI CORP	20	16	18.5	0.4	2.1
Q	SHAREO MED SYS CORP	19	12	13.25	0.1	1.0
Q	SOFTWARE PUBG CORP	21	10	15.25	-1.5	-9.0
A	STERLING SOFTWARE INC	9	5	8.875	-0.1	-1.4
Q	SUNGARO DATA SYS INC	24	13	23.125	-0.4	-1.6
Q	SYSTEMATICS INC	40	30	36	0.8	2.1
N	SYSTEM CENTER INC	26	17	19.375	0.4	2.0
N	SYS. SOFT INC	31	16	30.25	2.8	10.0
Q	WOROSTAR	3	2	1.688	0.0	0.0

Semiconductors

N	AOV MICRO DEVICES INC	11	7	8	0.5	6.7
N	ANALOG DEVICES INC	13	8	8.75	-0.1	-1.4
Q	ANALOGIC CORP	11	8	10.125	0.5	5.2
Q	CHIPS & TECHNOLOGIES INC	26	11	16.375	-1.1	-6.4
Q	INTEL CORP	36	21	32.25	-2.5	-7.2
Q	MICRON TECHNOLOGY INC	26	10	10.5	0.8	7.7

N	MOTOROLA INC	63	40	57	-2.0	-3.4
N	NATL SEMICONDUCTOR	10	6	7	-0.3	-3.4
N	TEXAS INSTRS INC	47	28	35.875	-0.3	-0.7
A	WESTERN DIGITAL CORP	15	6	7.875	-0.1	-1.6

Peripherals

Q	ALLOY COMP	3	1	1.375	0.0	0.0
N	AM INTL INC	6	4	4.375	0.0	0.0
Q	AST RESH INC	11	7	10.5	-0.1	-1.2
Q	AUTO TROL TECH CORP	6	4	3.75	-0.1	-3.2
Q	BANCTEC INC	20	10	14.125	-0.5	-3.4
Q	CIPHER DATA PRODS INC	11	4	5.125	0.6	13.9
A	COGNITRONICS CORP	8	2	6	-0.1	-2.0
Q	CONNOR PERIPHERALS	16	7	11.25	-1.3	-10.0
A	DATAPRODUCTS CORP	18	8	7.75	-0.3	-3.1
A	DATARAM CORP	12	7	9.75	0.3	2.6
N	EASTMAN KODAK CO	52	41	41.875	-1.1	-2.6
N	E M C CORP MASS	6	3	3.625	-0.1	-3.3
Q	EMULEX CORP	12	5	5.875	-0.3	-4.1
Q	EVANS & SUTHERLAND	25	15	23	-0.5	-2.1
Q	ICOT CORP	3	1	1.5	0.0	0.0
Q	INTERLEAF INC	10	5	6	-0.1	-2.0
Q	IONEGA CORP	5	2	3.063	-0.1	-3.9
Q	LEE DATA CORP	4	1	1.438	-0.1	-4.1
Q	MASSTOR SYS CORP	4	2	2.25	-0.1	-2.7
Q	MAXTOR CORP	12	7	8.375	-1.1	-11.8
Q	MICROPOLIS CORP	9	3	3.5	-0.1	-3.4
Q	MINISCRIBE CORP	9	0	0.5	-0.1	-20.0
N	MINNESOTA MNG & MFG CO	82	60	81.5	2.4	3.0
Q	PERSONAL COMP PRODUCTS INC	6	4	4.125	0.0	0.0
Q	PRIMAR CORP	2	0	0.063	0.0	-33.0
Q	PRINTRONIX INC	10	7	10	0.1	1.3
N	QMS INC	12	7	11.25	0.3	2.3
N	QUANTUM CORP	17	4	9	-1.6	-15.3
N	RECOGNITION EQUIP INC	13	6	7.125	-0.3	-3.4
N	REXON INC	8	6	6.25	0.5	8.7
Q	SEAGATE TECHNOLOGY	16	7	14.125	-0.3	-1.7
N	STORAGE TECH CORP	23	9	12.5	-0.9	-6.5
Q	TANDON CORP	1	0	0.813	0.1	8.4
N	TEKTRONIX INC	24	16	16.625	-0.4	-2.2
Q	TELEVIDEO SYS INC	1	0	0.25	0.0	0.0
N	XEROX CORP	69	56	57.625	-2.0	-3.4

Leasing Companies

Q	AMPLICON INC	115	11	11.25	-0.3	-2.2
N	CAPITAL ASSOC INTL INC	9	4	4.375	0.0	0.0
N	COMISCO INC	34	19	23.25	-1.5	-6.1
Q	CONTINENTAL INFO SYS	2	0	0.281	-0.1	-25.1
Q	LDI CORPORATION	18	12	15.125	-1.1	-6.9
Q	PHOENIX AMERN INC	5	3	3.625	-0.1	-3.3
Q	SELECTERM INC	9	5	6.5	0.0	0.0

U.S. vendors feel Soviet need

BY ELLIS BOOKER
CW STAFF

Capitalizing on the rapidly warming political climate, U.S. technology firms are lining up to announce trading ties with the Soviet Union.

All the deals, made over the past three weeks, must first gain authorization from the U.S. Department of Commerce and pass security studies conducted by the Department of State and the Pentagon, among other agencies. The sales must also be approved by U.S. allies through the Coordinating Committee on Multilateral Export Controls (Cocom).

However, the Bush administration recently signaled its intent to ease some of these export rules.

Last week, two computer firms played their Soviet cards.

Control Data Corp. in Minneapolis said it had received an order valued at \$32 million for six Cyber mainframes to modernize the Soviet Union's civilian nuclear energy program.

The Soviet Research and De-

velopment Institute of Power Engineering will use the Cyber 962-11s to analyze safety factors in the Soviet Union's 50 civilian nuclear power plants, using software developed by the Soviet Union, the International Atomic Energy Agency and CDC.

"These computers will help the Soviet Union improve civilian nuclear safety, which is a global environmental concern," said James E. Ousley, president of CDC's Computer Products Group.

The Cyber mainframes would be the most powerful computers ever shipped to the Soviet Union from the U.S., and Ousley said CDC has been working with the U.S. government agencies since signing a contract with the Soviet agency in July. The Cyber 962 is nearly six times as powerful as current U.S. export guidelines allow to go to the Soviet Union and thus would require a government waiver.



The Soviet Institute of Power Engineering's Adamov (left) and CDC's Ousley

The contract, Ousley said, "calls for end-user safeguards and government-to-government assurances that the computers will be dedicated exclusively to safety analysis of civilian nuclear reactors." According to a spokesman, CDC is optimistic its request for an export license will be approved by next spring.

Meanwhile, Data General Corp. Chairman Edson de Castro was in Moscow last week to cele-

brate the signing of a joint venture with Austria-based industrial automation and contracting firm Voest Alpine Industrieanlagenbau GmbH and NPO Parma, a Soviet software development firm. The partners have established Perekat, to be based in the Soviet city of Perm, to market industrial automation systems on DG platforms inside the Soviet Union. The joint venture talks among DG and Voest Alpine, which has done business in the Soviet Union since 1949, began two years ago.

"Becoming the first major American computer company to enter into a joint venture with a Soviet company fits well with Data General's tradition," de Castro said, adding that DG opened its first European office in 1970 and last year made 50% of its sales overseas.

In October, after receiving U.S. government approvals, DG shipped one of its low-end minicomputers, an Eclipse MV/2000, to the Soviet software firm and is now helping it port its applications for Soviet-made

computers to the DG platform. DG recently requested approval to send a more powerful system, the MV/7800, and expects this export license to be approved early next year, a company spokesman said.

Earlier this month, US West International said it planned a \$500 million optical-fiber link among Japan, the Soviet Union and Europe.

Work on the fiber line, which is expected to begin in the first half of 1990 and take three to five years, calls for traversing the Soviet Union, creating the longest fiber-optic line in the world and completing the global fiber network, US West said. Participants in the project include US West, the Soviet Ministry of Posts and Telecommunications in Moscow and national telecommunications firms in Japan, Italy, the UK, Australia, Denmark and West Germany.

Large-scale computer exports to the Soviet Union were not uncommon in the 1970s. However, shipments ended after the Soviet invasion of Afghanistan in 1979. In May, however, the Bush administration moved to a "case-by-case" policy following the Soviet withdrawal from Afghanistan.

U.S. ruminating about relaxing restrictions

BY MITCH BETTS
CW STAFF

WASHINGTON, D.C. — The Bush administration is considering a gradual relaxation of U.S. restrictions on exports of computer and networking equipment to Hungary, Poland and other emerging democracies in Eastern Europe, according to U.S.

said in a television interview.

Under existing regulations, the U.S. allows the export of desktop microcomputers with processing power equivalent to an IBM Personal Computer AT for all destinations, including the Soviet Bloc. That decontrol action, announced six months ago, covered desktop micros using the Intel Corp. 80286 chip and

Exceptions are granted on a case-by-case basis, particularly when a low-end computer system is destined for a Soviet user who is no threat to U.S. security, an industry source said. (The U.S. had a "no exceptions" policy for exports to the Soviet Bloc after the invasion of Afghanistan, but President Bush lifted that policy May 27 after the Soviet withdrawal.)

Meanwhile, several vendors are urging the Commerce Department to raise the regular threshold to the Intel 80386 level, said Gary Wilmarth, director of export services at Sandler & Travis Trade Advisory Services in East Granby, Conn.

Existing export controls were designed to prevent Soviet-Bloc countries from obtaining high-tech items that could be used for military purposes. Before making any changes, the U.S. will get the approval of its allies through the Paris-based Coordinating Committee on Multilateral Export Controls (Cocom).

Although U.S. vendors are excited about the new business opportunities in Eastern Europe, they now face such barriers as Cocom export controls, political instability and the lack of a convertible currency for repatriating profits [CW, Nov. 27].

The new initiative responds to direct requests from Hungary, Poland and Czechoslovakia for more access to Western technology. Mosbacher and other Commerce officials envision the following step-by-step program:

- Cocom would consider on a case-by-case basis whether spe-

cific technology shipments would be allowed for nonmilitary purposes.

- If that experiment works, export controls would be relaxed for specific industry sectors, such as banking, telecommunications, education, medical services and transportation. Each country would have to allow on-


site inspections to verify that the technology was not diverted to military uses.

- If the sectoral and verification programs work, Cocom could consider across-the-board relaxation of export controls.

Mosbacher stressed, however, that the program would not mean the end of Cocom.

Eyes on the prize

The number of domestically produced or imported low-end computers delivered in the Soviet Union in 1988 was estimated at a trickling pace



• Western MS-DOS PCs	70,000
• Soviet or CMEA*-origin Alpha-DOS PCs	19,000
• Western-origin 8-bit computers	11,000
• CMEA-origin 8-bit computers	4,000
• Soviet-origin 8-bit computers	30,000
• Other Soviet-origin professional PCs	11,000
PC market total	145,000

*Council for Mutual Economic Assistance

SOURCE: DATAQUEST, INC.

CW CHART: JOHN YORK

Commerce Secretary Robert A. Mosbacher.

But the Commerce Department proposal, which must be approved by the State Department and the Pentagon, would not apply to the Soviet Union any time soon. "We have a lot of steps with the Soviets before we get to that point," Mosbacher

the Motorola, Inc. 68000 chip [CW, July 31].

Applications to export computers above the Intel 286 threshold to the Soviet Bloc are usually turned down, but there can be exceptions, such as the approved sale of a Data General Corp. minicomputer to the Soviet Union (see story above).

First in the USSR

Dwarfed in size by the U.S.-based technology giants rushing to stake an early claim to doing business with the Soviet Union, Innovation International, Inc. — a Boston-based computer company with current sales in the \$4 million ballpark — could be the first to put the VAR in "Tovarich."

According to Innovation Chairman Frank G. Wright, his company is the first — and thus far the only — to receive clearance from the U.S. Department of Defense to export computer parts for final assembly in the Soviet Union.

The joint venture between Innovation — which scouts deals and alliances worldwide while its wholly owned Cleveland, Wis.-based subsidiary manufactures microcomputers and personal computer peripherals — and the Soviet Ministry of the Radio Industry (Radioexport) has not come easily, Wright said.

Traditionally, he said, the Pentagon has been willing to approve export licenses for technology headed to Soviet Bloc countries only for fully assembled machines. This policy, grounded in fears of jeopardized military security, led the Defense Department to veto Innovation's application four times during the past 11 months, Wright said. He attributed the success of the fifth attempt to the rapidly changing climate in U.S.-Soviet trade relations in the wake of the recent Bush-Gorbachev Malta summit.

The Innovation/Radioexport deal still has to be cleared by the Department of Commerce. But Wright voiced confidence that the clearance would be forthcoming. The venture, he said, could yield up to \$1 million worth of IBM-compatible PCs and more than \$1 billion for his firm over the next several years.

NELL MARGOLIS

Wang shapes self in CICS image

BY MARYFRAN JOHNSON
CW STAFF

LOWELL, Mass. — Wang Laboratories, Inc. stepped forward last week with its own document imaging system for IBM mainframes, promising a less costly, more flexible system than the computer giant's own imaging products.

Wang's Open/Image-CICS is a set of software tools that integrate document imaging functions with IBM's CICS data processing applications. The \$4,000 software package will be available in February.

Wang officials acknowledged that customers who lack the necessary Wang hardware would have to spend at least \$200,000 to get the imaging system up and running.

However, installation of IBM's Image/Plus software for mainframe or departmental systems is also pricey, ranging from \$200,000 to \$15 million, including the host system.

"In the IBM world, it's an expensive alternative to put all that

software in a mainframe environment," said Mike Howard, an analyst at Gartner Group, Inc., a market research firm in Stamford, Conn.

Also, IBM's Image/Plus products are not generally available, said Scott McCready, an analyst at International Data Corp. in Framingham, Mass. He said fewer than two dozen customer sites are now using Image/Plus, which puts Wang in the stronger position of reaching the market first with products more oriented to office needs.

The imaging software provides an application programming interface that allows programmers to integrate functions such as scanning, displaying, printing and sending images with IBM mainframe applications.

An auto insurance company, for example, could use Open/Image-CICS to give users concurrent access to a mainframe-based claims management database and supporting document images such as letters, accident forms and police reports.

The software resides on the

mainframe, which controls the imaging service itself. A Wang VS minicomputer acts as the image server — a kind of connecting link between the mainframe and the personal computer or workstation.

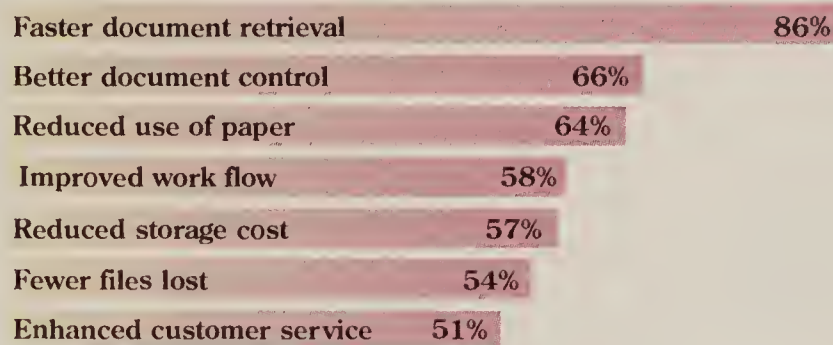
be against IBM's Image/Plus" for the Application System/400 midrange machine, McCready said. "I think even there Wang can be competitive on price, but it is software and third-party support that will be most important."

There are at least 800 businesses nationwide with both IBM mainframes and Wang mini-

All I want . . .

Users who are looking toward image processing are first hoping for faster document retrieval

PERCENT OF RESPONDENTS (BASE OF 596)



SOURCE: THE YANKEE GROUP

CW CHART, JOHN YORK

Medium-size companies and individual departments in large corporations are likely places for Wang to secure a foothold in imaging, McCready said.

"The real battle for Wang will

computers installed, according to market research firm Computer Intelligence in La Jolla, Calif.

The new imaging software is the second product to be intro-

duced in Wang's Open/Image architecture, the first being a PC-based version of Open/Image that runs under Microsoft Corp. Windows. Wang has announced its intention to provide imaging software for several other major application platforms, including DOS, OS/2 and Unix.

"This is a further fulfillment of Wang's commitment to become more open with their architecture," Howard said.

Wang also appears to be a step ahead of other vendors in providing its imaging customers with facsimile, industry-standard electronic mail and optical character reading capabilities. Those additional services, all sold separately, can be integrated into the imaging system from the VS server. They are not currently available for IBM's imaging system.

An IBM spokeswoman said she had not seen the Wang press release on Open/Image-CICS and could not comment on the product claims.

CICS is a widely used, general-purpose data communications system providing terminal communications, data management and task control for on-line applications in the IBM environment.

Xerox suit aims to put Apple claims in trash can

BY RICHARD PASTORE
CW STAFF

Apple Computer, Inc., which has been waging a lengthy copyright frontal assault, last week suffered a flank attack. Xerox Corp. filed a copyright misappropriation suit against Apple that observers said could knock the wind out of Apple's own copyright claims against Microsoft Corp. and Hewlett-Packard Co.

In a U.S. District Court filing, Xerox charged Apple with unlawfully using copyrighted graphical user interface software. The company is seeking \$150 million in damages and invalidation of Apple copyrights.

The suit claims that Apple's Lisa and Macintosh computer software systems, introduced in 1983 and 1984 respectively, incorporate "substantial portions

of Star," an interface developed in 1981 by the Xerox Palo Alto Research Center. The suit states that "Apple was never licensed to use the Star program or look and feel."

Apple denied the charge and intends to do battle in court. "The allegation that Apple's Lisa and Macintosh copyrights are not valid is completely unfounded," said Apple Vice-President and General Counsel Edward Stead.

Apple earlier charged Microsoft and HP with infringement of its Macintosh look and feel. "Now the shoe is on the other foot," said Mitch Kapor, chairman of On Technology, Inc. in Cambridge, Mass. The former chairman and board member of Lotus Development Corp. participated in several look-and-feel lawsuits of his own.

"Xerox's suit undercuts Apple's position that they're being harmed at a moral level," Kapor said. "It reveals that this is not a battle where there is moral righteousness on one side and evil-doing on the other. It's a big company trying to press business advantages."

The Xerox claim could have a legal impact on Apple's suit as well, said Mark Goldberg, a partner and high-technology expert at law firm Schwab, Goldberg, Price and Dannay in New York.

Apple contends that Micro-

soft and HP infringed on Apple's "expression" of ideas. In contrast, Apple said its Macintosh only incorporated Xerox's ideas, and ideas alone are not copyrightable under U.S. law.

"That is an appropriate contention for Apple to make," Goldberg said. "This is a common question in a copyright controversy — the uncopyrightable idea vs. the copyrightable expression." Apple's suit has yet to be settled in court.

The fact that Xerox waited seven years to challenge Apple

casts doubt on the success of the claim, observers agreed.

But a Xerox spokesman said the company waited until now to protect its copyright because recent clarifications in software laws have made such protection more feasible.

The effect of the latest suit on the companies and their customers will be negligible, observers said. "The customers don't give a damn who gets what part of the licensing fee," said David Wu, an analyst at S. G. Warburg & Co. in New York.

Sting

FROM PAGE 1

NCR since 1985, allegedly stole NCR document-imaging systems as well as underlying technological specifications and accompanying marketing plans, from NCR's headquarters in Dayton. He was suspended last week pending further investigation, according to NCR.

Latchoo asked for a \$200,000

payment for the information, according to an FBI agent who testified before U.S. Magistrate William F. Hall Jr. in Philadelphia.

The arrest came only days after NCR issued a statement of direction about its imaging strategy (see story page 31). The FBI said that NCR claimed it stood to lose around \$100 million had Latchoo's information fallen into Unisys' hands.

In a statement, Unisys said Latchoo contacted one of its employees and represented himself as a market researcher with information about a competitor's imaging systems. According to Unisys and the FBI, the Unisys employee suspected this was proprietary information regarding NCR's products and immediately told his management, who in turn alerted the U.S. Attorney's office in Philadelphia.

An FBI affidavit identified the Unisys employee as Barry N. Lurie, director of Unisys' document-imaging systems and stat-

ed that Latchoo made the initial contact on Oct. 16.

Prior to the arrest, Latchoo and Lurie had several more phone conversations and arranged the Monday meeting at Unisys' corporate offices in Blue Bell. The meeting was videotaped by the FBI.

If convicted, Latchoo faces a maximum 10-year jail sentence and a \$10,000 fine. At a hearing in Philadelphia last Thursday, Latchoo was released after relatives paid 10% of a \$100,000 bail.

A Canadian citizen, Latchoo will be limited to travel in New Jersey and Pennsylvania until a federal grand jury can hear the case within the next 30 days, the FBI said.

A second count, wire fraud, was added to the interstate transportation of stolen property charge against Latchoo, the FBI said.

Latchoo's attorney said that his client intends to plead innocent.

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TRENDS



Data General

Cost of ownership

Figures represent the cost of ownership over a five-year period

Cost per user

Significant price cuts from Data General in 1989 have made cost-per-user figures more attractive.

1988 1989

4 users, MV/1000DC

\$22,122

\$17,439

32 users, MV/2500DC

\$10,272

\$7,403

100 users, MV/15000/10

\$8,745

\$7,273

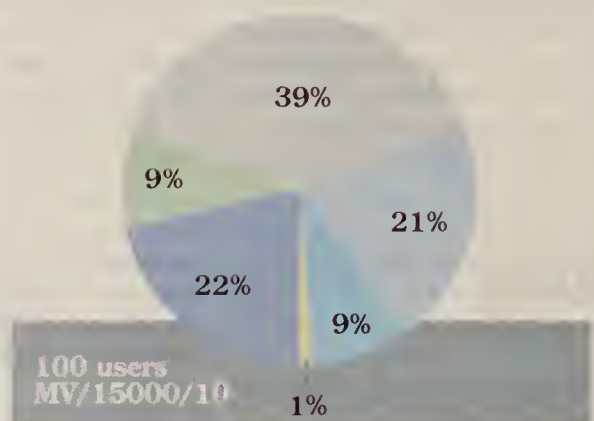
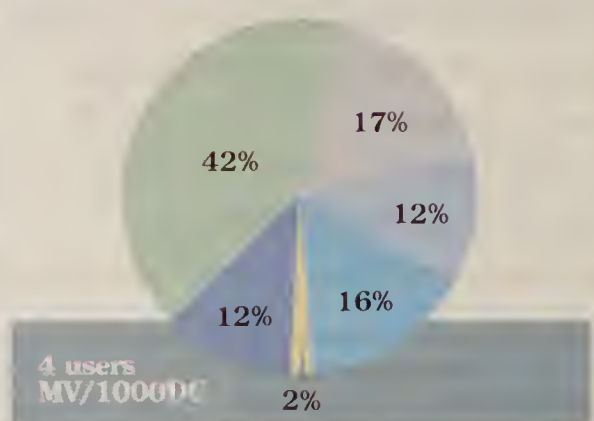
SOURCE: THE SIERRA GROUP, INC.

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Percent of system cost

Data General has followed the industry trend toward raising prices for maintenance and support while cutting hardware costs.

CPU CPU software Hardware maintenance
Peripherals PC software Software maintenance



Figures total more than 100% because of rounding

INSIDE LINES

Sears a VAX reseller?

DEC's VAX may be the flagship line of systems on which to run the All-In-1 office software package, but for VAX Appliances, Inc. in Solon, Ohio, VAX is the "All-In-1 Cleaning Crew," and it's available at Sears Brand Central. VAX the vac was introduced in Europe in 1977, the same year DEC unveiled its VAX computers.

"It's just not conceivable for a consumer to mistake a VAX vacuum cleaner for a VAX computer," said Betsy Umstead, marketing manager at VAX Appliances. Yeah, but can DEC's version suck out a clogged sink drain?

Is there a hole in this theory?

The Royal Bank of Canada was recently informed by IBM that the bank's latest 3380 K disk drive glitches stemmed from the drive's inner bearing, not the outer bearing that had been the focus of past industrywide woes. IBM recommended warming up the air around the drive — the inner bearing apparently doesn't function very well with too much cool air — by removing additional floor tiles near the equipment in order to let in more warm air. The additional tiles had been put near drives in the first place at IBM's recommendation to keep the warmer air away from the drive.

Full disclosure

Officials at Security Pacific, a major bank holding company, apparently weren't thrilled when Jerry Appleby, the outspoken vice-president of telecommunications services at Security Pacific Automation Co., testified before the U.S. House Subcommittee on Telecommunications and Finance earlier this year as spokesman for the user group Tele-Communications Association. The execs worried that "if I messed up, I might tick off a key congressman for them on a finance issue" that could be worth billions of dollars, Appleby commented in a speech last week.

Moderately parallel

High-performance workstation vendor Alliant Computer Systems Corp. will supposedly launch a moderately parallel 32-CPU system based on the Intel I860 chip later this month.

A switch in time saves . . .

Merrill Lynch is about to unload its two 5 ESS telecommunications switches. DuWayne Peterson, the company's executive vice-president of operations/systems and telecommunications, refused to comment on the buyer, but he said that the switches were not being used anywhere near capacity. The huge AT&T office switches were on the hit list even before the firm opted to use MCI as its carrier.

If it's out there, it's in here . . .

Companies that need the aid of a consultant to help them implement electronic data interchange (EDI) may think twice before letting their fingers do the walking through the "consulting" listings in the Yellow Pages. An attendee at an EDI conference recently said his Fortune 500 company is offering assistance to its trading partners, but, he said, "We wind up training *their* consultants!"

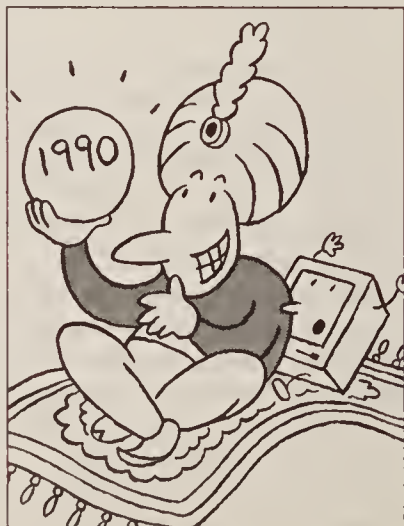
Long-distance handshake

Modem Controls is said to be set to introduce an MHS version of its Postmaster electronic-mail system next month for Novell local-area networks that will reportedly enable communications over wide-area networks.

IBM's problems have some people within the industry speculating that John Akers' five years at the helm will come to an end in late 1990. One former Blue says the climax will come if IBM's "targeted attrition" starts going after programmers; he noted that IBM is already closing down satellite labs in Silicon Valley and pulling them back into Santa Teresa, which surely won't sit well with the more creative types who chafe under centralized direction. We'll be keeping our eye on this and counting on you to watch for the white smoke to rise over Armonk. Call in sightings to News Editor Pete Bartolik at 800-343-6474.

NEXT WEEK

Computerworld's special "Forecast 1990" double-issue previews the most important issues and trends for the coming year. The *Issues* section looks at the information systems identity crisis, integration, the future of outsourcing, economizing and how companies plan to tackle application backlogs in 1990. *Business and Industry* examines



DAVID BRION

how European unification will affect IS and the computer industry and much more. *Technology* takes a detailed look at key tools for the coming year, including client-server computing and enterprise network management. There will also be easy-to-read projections on the outlook for PCs, telecommunications, systems, data management and more.

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